

REPORT NO. 207-KAR-04-001

**SAFETY COMPLIANCE TESTING
FOR FMVSS 207**

SEATING SYSTEMS

2004 BMW
MINI COOPER
2-DOOR COUPE

NHTSA NO. C40501

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August 31, 2004

FINAL REPORT

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SECTION 1
PURPOSE OF COMPLIANCE TEST

1. PURPOSE OF COMPLIANCE TEST

Tests were conducted on a 2004 BMW Mini Cooper 2-Door Coupe, manufactured by Bayerische Motoren Werke Corporation, to determine compliance with FMVSS 207, "Seating Systems". The purpose of this standard is to reduce the number of deaths and injuries that may be caused by the failure of seats, their attachment hardware, and their installation when said failure results from the forces on the seat in a vehicle impact.

All tests were conducted based on the current National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC) Laboratory Procedures, TP-207-09, dated June 18, 1992, and corresponding KARCO Engineering, LLC test procedure KTP-207, dated August 2, 2002. Detailed procedures for receiving, inspecting, testing and reporting of test results are described in the test procedures and are not repeated in this report.

This report is organized in sections containing pertinent test information and data tables as follows:

- Section 2 - Compliance Test Procedure and Data Summary
- Section 3 - Compliance Test Data
- Section 4 - Noncompliance Data (if applicable)
- Appendix A - Photographs
- Appendix B - Data Plots
- Appendix C - Test Equipment List and Calibration Information

SECTION 2
COMPLIANCE TEST PROCEDURE and DATA SUMMARY

2. COMPLIANCE TEST PROCEDURE AND DATA SUMMARY

A 2004 BMW Mini Cooper 2-Door Coupe was subjected to FMVSS 207 compliance testing on August 20 through August 30, 2004. All tests were conducted at KARCO Engineering, LLC in Adelanto, California. Summary data is shown on Data Sheet No. 2. The following tests were performed:

- Receiving inspection
- Aft moment tests on front seat backs
- Forward load on front seat backs
- Aft load tests on front seat frames and adjusters
- Forward load tests on front seat frames and adjusters
- Forward load tests on front set frames and adjusters, including FMVSS 210 Loads
- Forward load test on rear seat cushions and seat backs
- Aft load test on rear seat cushions and seat backs

The tests were conducted per the FMVSS 207 test procedure. The significant aspects of the test procedure are described in the following paragraphs.

2.1 Test Vehicle Inspection. The test vehicle was inspected to verify that all seat, restraint systems and seat belt assembly anchorage systems are complete and the seat adjusting mechanisms are working properly.

2.2 Test Vehicle Preparation and Pre-test Measurements. The test vehicle was securely mounted to the test fixture and connected to the appropriate number of hydraulic actuators. Lateral spacing of the individual seat anchorages were measured and all other angular and dimensional measurements were verified to be in compliance with the requirements of the subject safety standards. The components were weighed and their centers of gravity determined.

2.3 Static Load Tests-General Performance Requirements.

When tested in accordance with S5, each occupant seat, other than a side-facing seat or a passenger seat on a bus, shall withstand the following forces:

- (a) In any position to which it can be adjusted — 20 times the weight of the seat applied in a forward longitudinal direction;

(Continued on next page)

2. (Continued)

- (b) In any position to which it can be adjusted — 20 times the weight of the seat applied in a rearward longitudinal direction;
- (c) For a seat belt assembly attached to the seat — the force specified in subparagraph (a), if it is a forward facing seat, or subparagraph (b), if it is a rearward facing seat, in each case applied simultaneously with the forces imposed on the seat by the seat belt assembly when it is loaded in accordance with section S4.2 of Federal Motor Vehicle Safety Standard No. 210; and
- (d) In its rearmost position — a force that produces a 3,300 inch-pound moment about the seating reference point (SRP) for each designated seating position (DSP) that the seat provides, applied to the upper cross-member of the seat back or the upper seat back, in a rearward longitudinal direction for forward-facing seats and in a forward longitudinal direction for rearward-facing seats.
- (e) To meet FMVSS 210 requirements, the anchorages, attachment hardware, and attachment bolts for all Type 2 and automatic seat belt assemblies that are installed to comply with Standard No. 208 (49 CFR 571.208) shall withstand 3,000 pound forces when tested in accordance with S5.2.

SECTION 3
COMPLIANCE TEST DATA

3. COMPLIANCE TEST DATA

The results of FMVSS 207 compliance tests that were conducted on the 2004 BMW Mini Cooper 2-Door Coupe on August 20, through August 30, 2004, to determine compliance with FMVSS 207, "Seating Systems" are presented in this section. No performance failures were identified for the vehicle tested.

DATA SHEET NO. 1
TEST VEHICLE RECEIVING INSPECTION

VEHICLE			
YEAR	2004	MAKE	BMW
MODEL	Mini Cooper	BODY STYLE	2-Door Coupe
NHTSA NO.	C40501	VIN	WMWRC33464TC49566
BUILD DATE	10/03	TEST DATE	
TEST LABORATORY		KARCO Engineering, L.L.C.	

1. First compliance test by laboratory for this vehicle is S207 test.

	Yes	<u>X</u>	No (Go to item 2)	
<u>X</u>				1.1 Label test vehicle with NHTSA Number
<u>X</u>				1.2 Verify all options on the "window sticker" are present on the vehicle
<u>X</u>				1.3 Verify tires and wheel rims are new and the same as listed
<u>X</u>				1.4 Verify there are no dents or other interior or exterior flaws
<u>X</u>				1.5 Verify the glove box contains an owner's manual, warranty document, consumer information, and extra keys
<u>X</u>				1.6 Verify the vehicle is equipped with the proper fuel filler cap
<u>X</u>				1.7 If the vehicle has been delivered from the dealer, verify the vehicle has been properly prepared and is in running condition

2. Verify seat adjusters are working

X Yes No

3. Verify there is a seat belt at each seating position

X Yes No

4. Without disturbing the integrity of each seat belt and anchorage, verify that each seat belt is attached to the anchorage. For seat belts that are attached to the seat, also verify the seats are attached to the seat anchors and the seat anchors are attached to the vehicle.

X Yes No

RESULTS OR RECEIVING INSPECTION:

PASS --	<u>X</u>
FAIL --	<u> </u>
CONDITIONAL --	<u> </u>

REMARKS:

RECORDED BY: MARK A. KRATZKE DATE: 08/20/04

APPROVED BY: MATTHEW A. IVORY DATE: 08/20/04

DATA SHEET NO. 2
SEATING SYSTEM TEST RESULTS

VEHICLE			
YEAR	2004	MAKE	BMW
MODEL	Mini Cooper	BODY STYLE	2-Door Coupe
NHTSA NO.	C40501	VIN	WMWRC33464TC49566
BUILD DATE	10/03	TEST DATE	
TEST LABORATORY	KARCO Engineering, L.L.C.		

LEGEND: Wa - Weight of Seat Assembly
 Wb - Weight of Seat Back
 Wc - Weight of Seat Cushion
 Z - Distance from Seat SRP to Uppermost Crossmember = 16.4 "

FOR FRONT BUCKET SEATS - - LEFT SIDE

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Seat Back	Forward	Wb = 16	20 x Wb = 320	919.0	N/A	N/A
Seat Assy.	Forward	Wa = 46	20 x Wa = 920	918.7	N/A	PASS
	Rearward	Wa = 46	20 x Wb = 320	919.0	N/A	PASS
Seat Back Moment	Rearward	N/A	3275 in-lb/Z	198.9	3261.9	PASS

FOR FRONT BUCKET SEATS - - RIGHT SIDE

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Seat Back	Forward	Wb = 16	20 x Wb = 320	319.3	N/A	N/A
Seat Assy.	Forward	Wb = 16	20 x Wb = 320	919.0	N/A	PASS
	Rearward	Wb = 16	20 x Wa = 920	919.0	N/A	PASS
Seat Back Moment	Rearward	N/A	3275 in-lb/Z	195.7	3209.4	PASS

(Continued on next page)

DATA SHEET NO. 2 (Continued)

FOR FRONT BUCKET SEATS - - COMBINED

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	ATTACHMENT (PASS/FAIL)
Driver Lap Belt	Forward	N/A	3,000 lbs, -10, -50	2971.9	PASS
Driver Shoulder Belt	Forward	N/A	3,000 lbs, -10, -50	2986.5	PASS
Center Lap Belt	Forward	N/A	5,000 lbs, -10, -50	N/A	N/A
Passenger Lap Belt	Forward	N/A	3,000 lbs, -10, -50	2992.0	PASS
Passenger Shoulder Belt	Forward	N/A	3,000 lbs, -10, -50	2978.1	PASS
Driver Seat Assembly	Forward	Wa = 46	20 x Wa = 920	911.9	PASS
Passenger Seat Assembly	Forward	Wa = 46	20 x Wa = 920	916.9	PASS

LEGEND: Wa - Weight of Seat Assembly
 Wb - Weight of Seat Back
 Wc - Weight of Seat Cushion
 Z - Distance from Seat SRP to Uppermost Crossmember = N/A

FOR REAR SEATS - -

COMPONENT	LOAD DIRECTION	COMPONENT WEIGHT (lbs)	REQUIRED LOAD (lbs)	ACTUAL LOAD (lbs)	PEAK MOMENT (in-lbs)	ATTACHMENT (PASS/FAIL)
Cushion	Forward	Wc = 10	20 x Wc = 200	198.8	N/A	PASS
Left Back	Forward	Wb = 16	20 x Wb = 320	310.2	N/A	PASS
Right Back	Forward	Wb = 16	20 x Wb = 320	312.4	N/A	PASS
Cushion	Aft	Wc = 10	20 x Wc = 200	187.7	N/A	PASS
Left Back	Aft	Wb = 16	20 x Wb = 320	319.4	N/A	PASS
Right Back	Aft	Wb = 16	20 x Wb = 320	315.5	N/A	PASS

COMMENTS:

RECORDED BY: MARK A. KRATZKE DATE: 08/30/04

APPROVED BY: MATTHEW A. IVORY DATE: 08/30/04

DATA SHEET NO. 3
SEAT BACK ANGLES

VEHICLE			
YEAR	2004	MAKE	BMW
MODEL	Mini Cooper	BODY STYLE	2-Door Coupe
NHTSA NO.	C40501	VIN	WMWRC33464TC49566
BUILD DATE	10/03	TEST DATE	08/20/04 – 08/30/04
TEST LABORATORY	KARCO Engineering, L.L.C.		

LAP BELT ANCHORAGES:

SEAT	SEATING POSITION	SPECIFIED ANGLE RANGE ABOVE HORIZONTAL	MEASURED ANGLE		DOES BELT SECURELY FIT ON PELVIS?
			I/B	O/B	
FRONT	Left	30 to 75 degrees	46	57	YES
	Center	30 to 75 degrees	N/A	N/A	N/A
	Right	30 to 75 degrees	44	52	YES
REAR	Left	30 to 75 degrees	35	40	YES
	Center	30 to 75 degrees	N/A	N/A	N/A
	Right	30 to 75 degrees	48	46	YES

SHOULDER BELT ANCHORAGES:

SEAT	SEATING POSITION	SPECIFIED ANGLE RANGE ABOVE OR BELOW HORIZONTAL	MEASURED ANGLE
FRONT	Left	0 – 80 degrees above	N/A
		0 – 40 degrees below	9°
	Right	0 – 80 degrees above	N/A
		0 – 40 degrees below	10°
REAR	Left	0 – 80 degrees above	9°
		0 – 40 degrees below	N/A
	Center	0 – 80 degrees above	N/A
		0 – 40 degrees below	N/A
	Right	0 – 80 degrees above	8°
		0 – 40 degrees below	N/A

RECORDED BY: MARK A. KRATZKE DATE: 08/20/04

APPROVED BY: MATTHEW A. IVORY DATE: 08/20/04

DATA SHEET NO. 4**REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING**

The following vehicle has been subjected to compliance testing for FMVSS No. 207

VEHICLE			
NHTSA NO.	C40501	TEST DATE	08/20/04 – 08/30/04
CONTRACT NO.	DTNH22-01-C-31025	VIN	WMWRC33464TC49566
SEAT CONFIGURATION			
VEHICLE OR SEAT MANUFACTURER			
TEST LABORATORY	KARCO Engineering, L.L.C.		

The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager (NAD-30), with a copy to the OVSC COTR. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

TEST VEHICLE INFORMATION			
Manufacturer	BAYERISCHE MOTOREN WERKE	VIN	WMWRC33464TC49566
Manufacturing Date	10/03	Delivery Date	03/06/04
Dealer	BOB SMITH BMW	NHTSA No.	C40501
Odometer Reading (mi.)	34	Fuel Type	GAS
Engine Displacement	1.6	Cylinders	4
Transmission	STANDARD	Final Drive	FRONT
Engine Placement	TRANSVERSE	Color	BLACK
Tire Press./Max. Cap. Front	40	Cold Tire Press.	32
Tire Press./Max. Cap. Rear	40	Cold Tire Press. Rear	32
Recommend Tire Size	175/65R15	Type of Spare	T115/70 R15
Tire Size on Vehicle	175/65R15	Manufacturer	CONTINENTAL
GVWR	3340	Cargo Capacity	1120
GAWR Front	1918	GAWR Rear	1609
Air Conditioning	YES	Power Steering	YES
Power Brakes	YES	AM/FM/Cassette	YES
Disc Brakes (Front)	YES	Disc Brakes (Rear)	NO
Power Windows	YES	Tilt Steering	YES
Anti-lock Brakes (ABS)	YES	Power Seats	YES
Driver Airbag	YES	Passenger Airbag	YES

Test Vehicle Condition: **FRONT OF VEHICLE WAS REMOVED, SEATS WERE TESTED.**

RECORDED BY: MARK A. KRATZKE DATE: 08/30/04

APPROVED BY: MATTHEW A. IVORY DATE: 08/30/04

APPENDIX A
PHOTOGRAPHS

A-1

2007-04-04-001

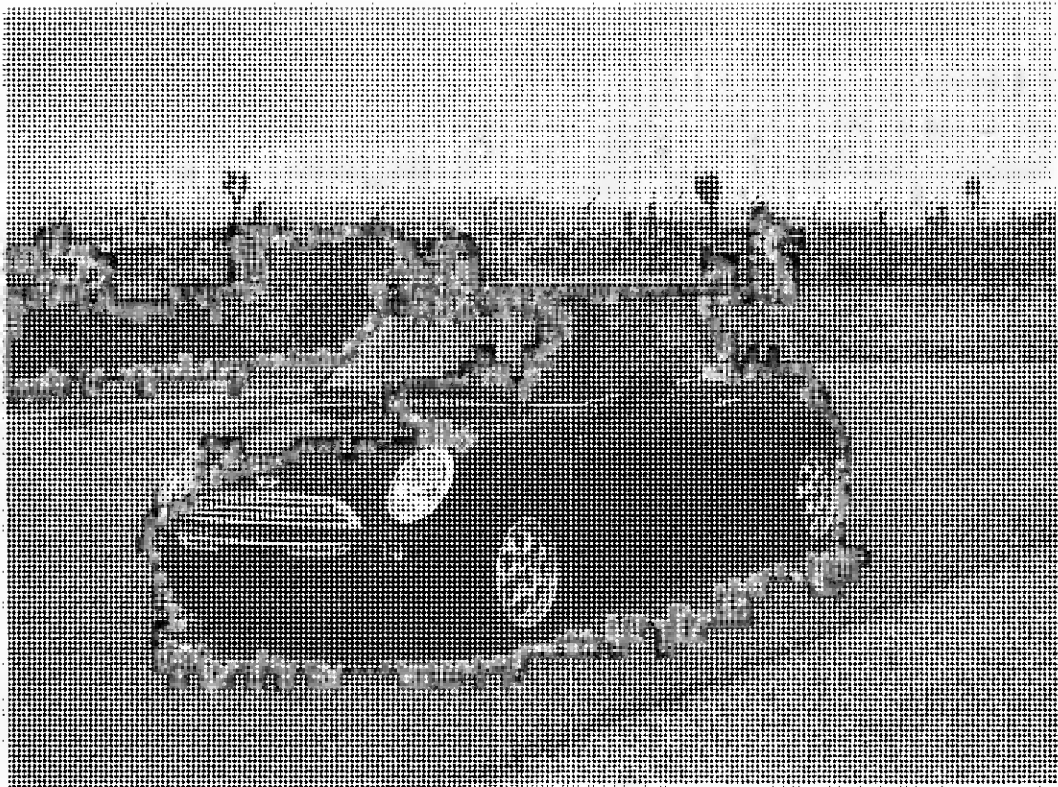


Figure A-1 Left Front (as Received)

A-2

2007-04-04-001

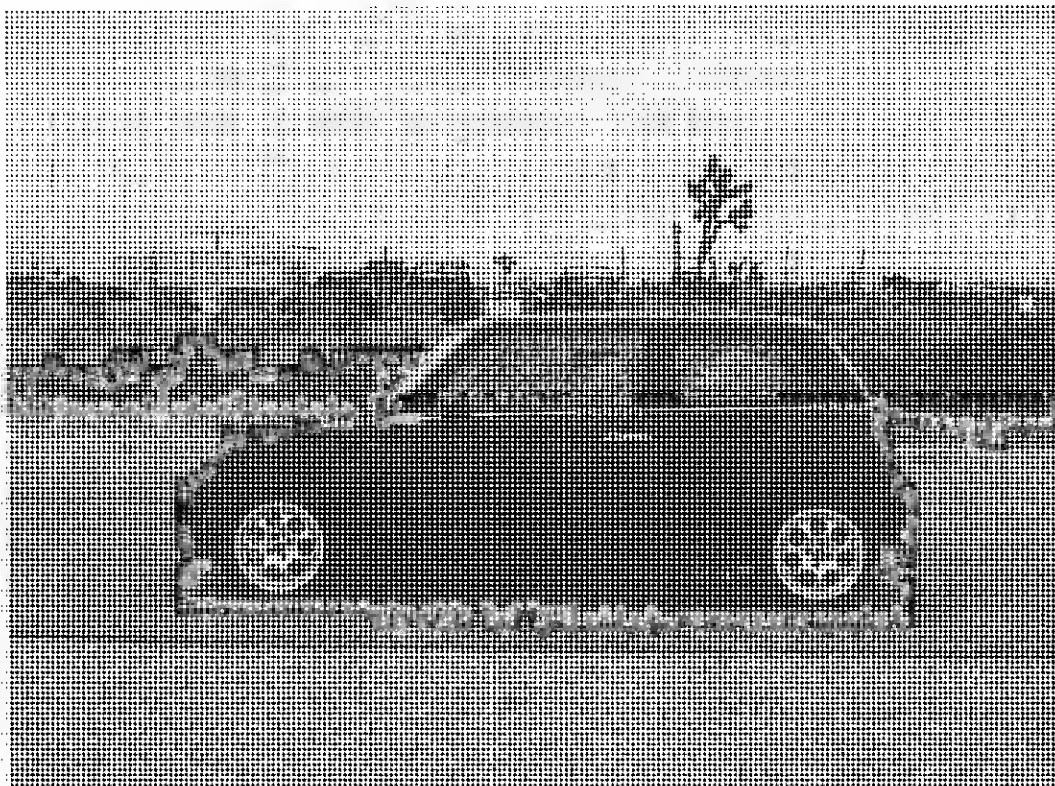


Figure A-2 Left Side (as Received)

A-3

207-K02-04-001

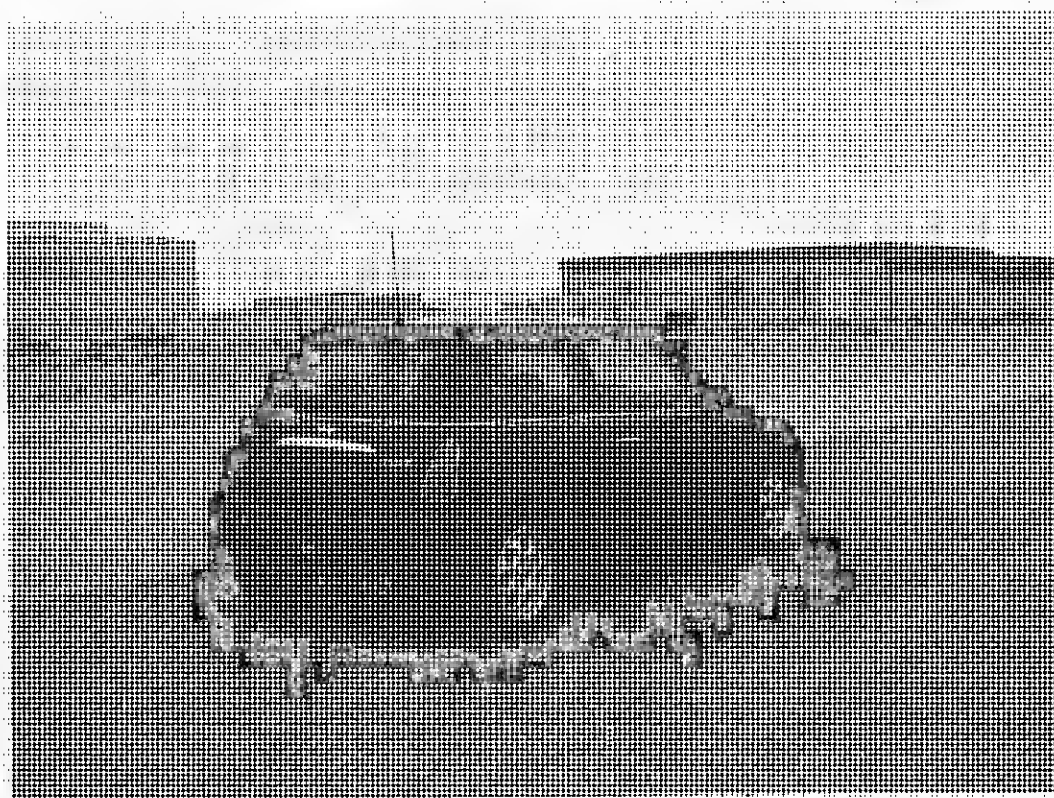


Figure A-3: Right Rear (as Received)

A-4

207-K02-04-001

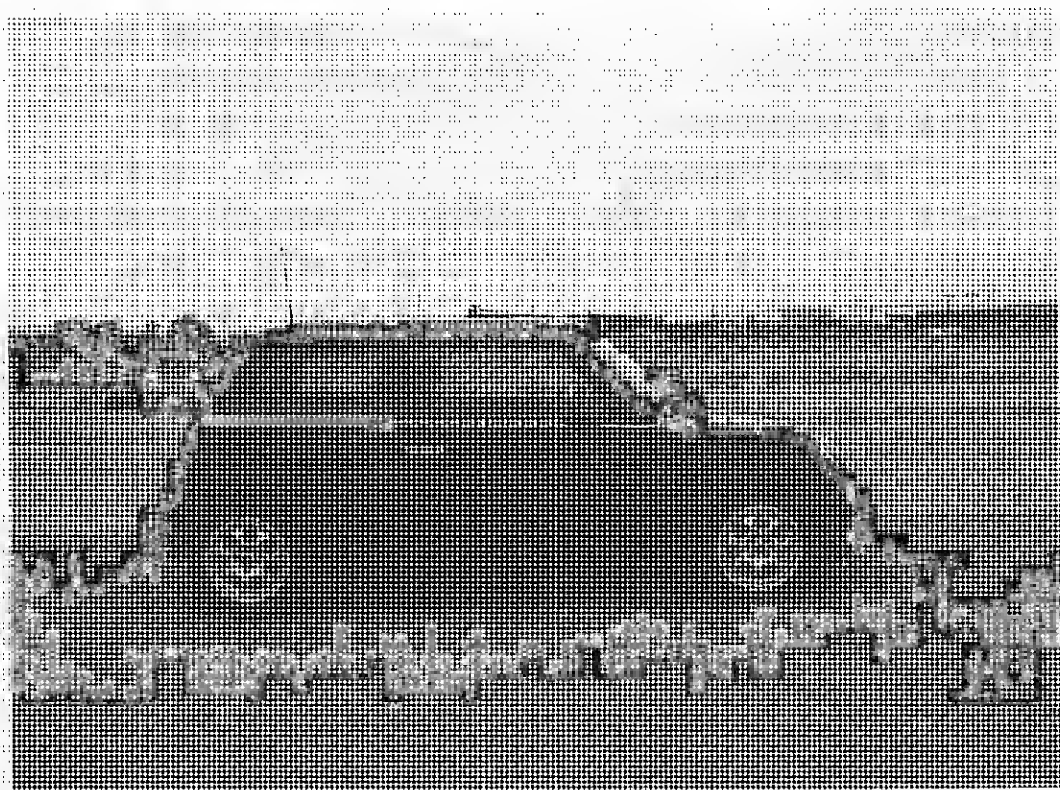


Figure A-4: Right Side (as Received)

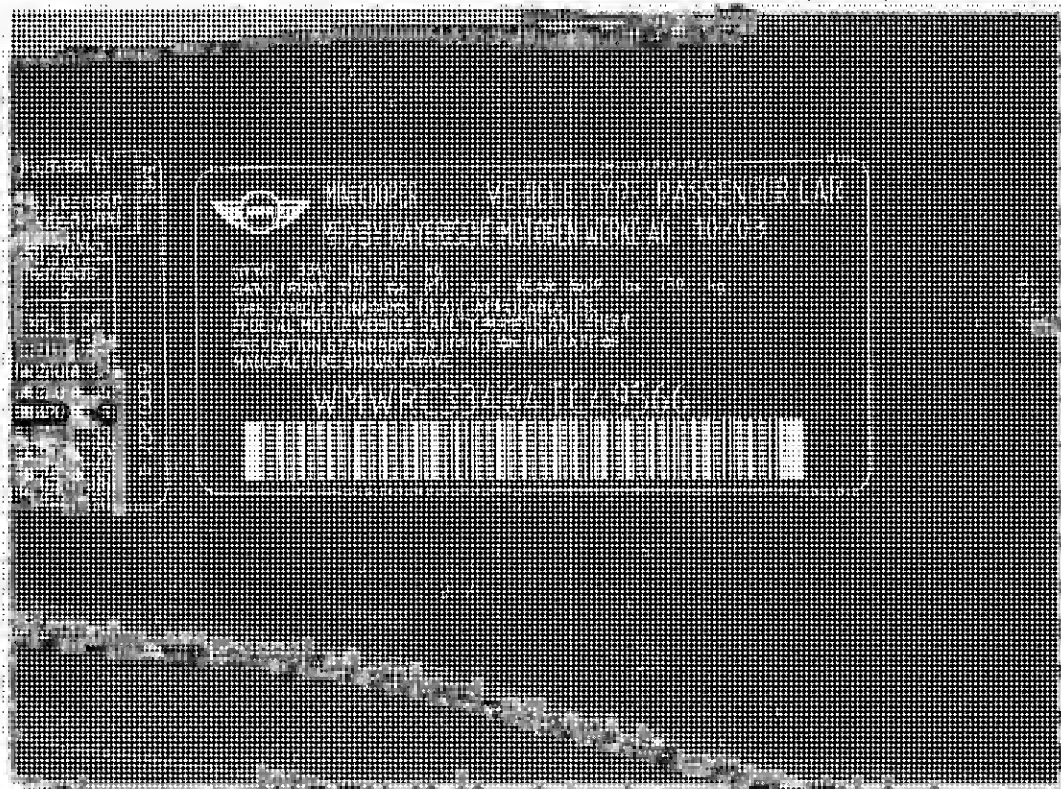


Figure A-1. Vehicle Certification Label

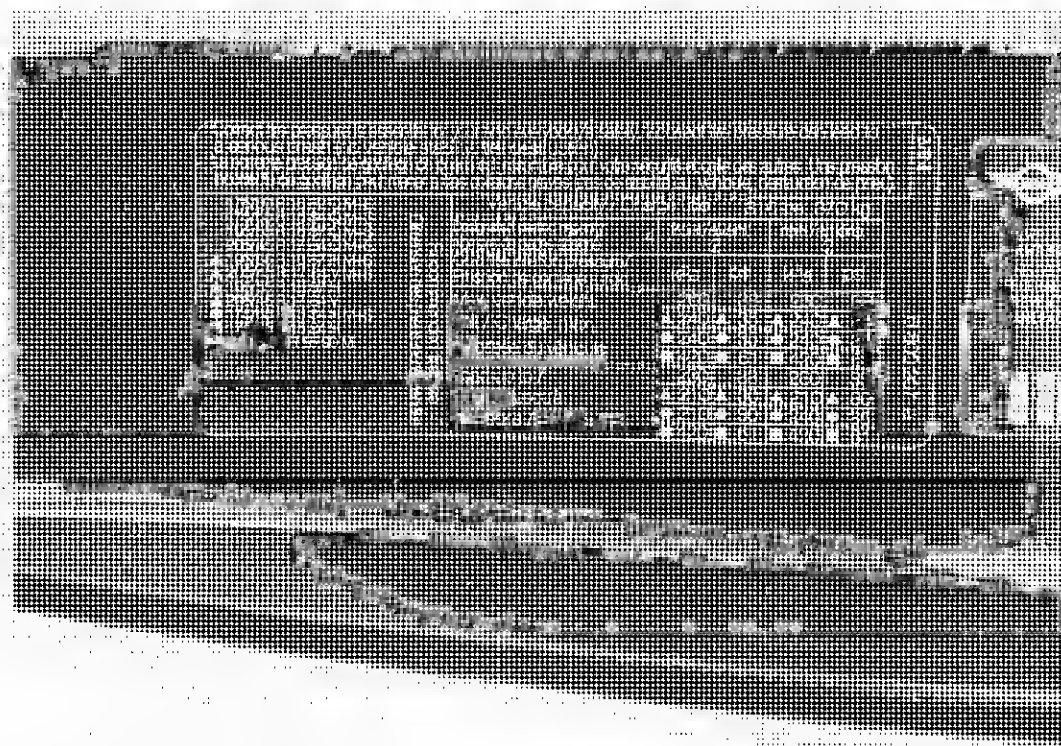


Figure A-3. Vehicle Tire Label

A-7

207 MAR 24 001

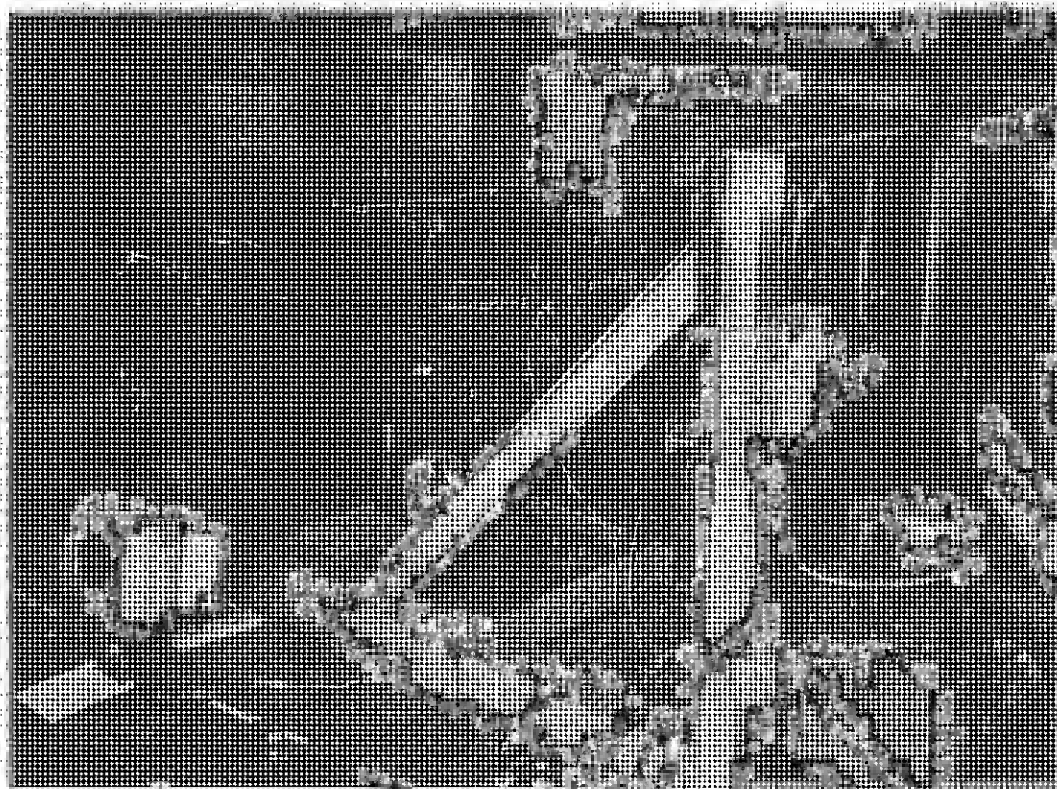


Figure A-7. Vehicle Mounted in Test Fixture

A-8

207 MAR 24 001



Figure A-8. Vehicle Mounted in Test Fixture

A-9

207 MAY 24 1971



Figure A-9. Vehicle Mounted in Test Fixture

A-10

207 MAY 24 1971

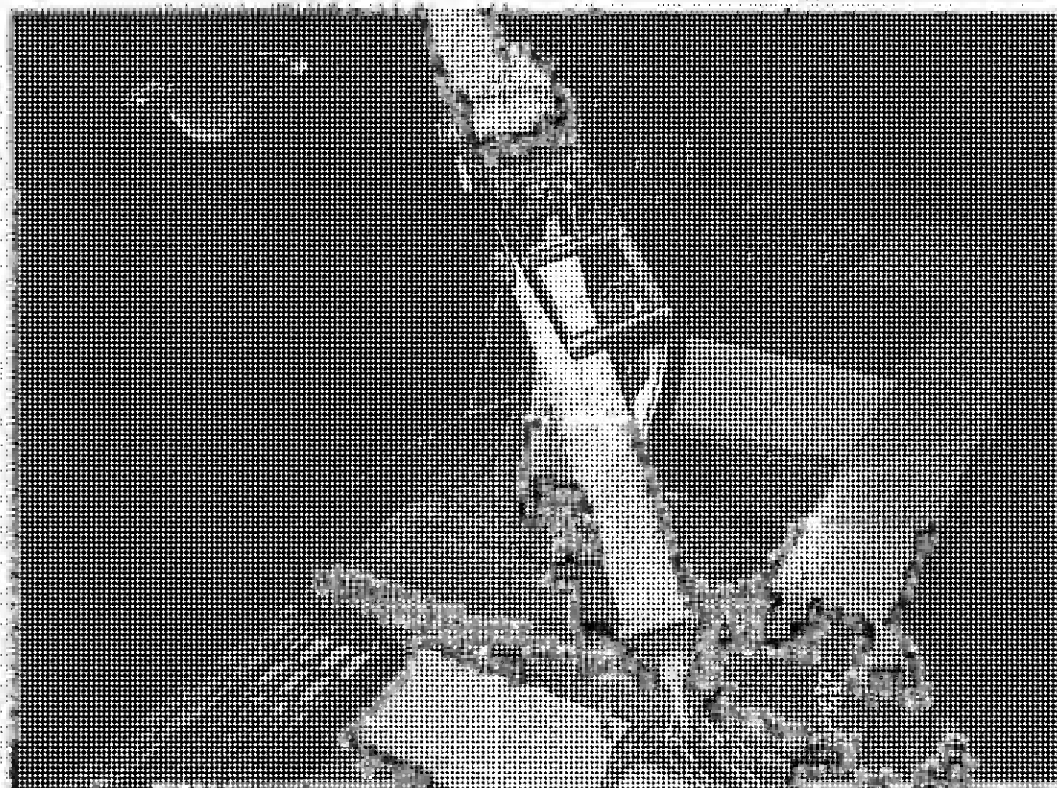


Figure A-10. Vehicle Mounted in Test Fixture

A-11

2007-10-29 04:00

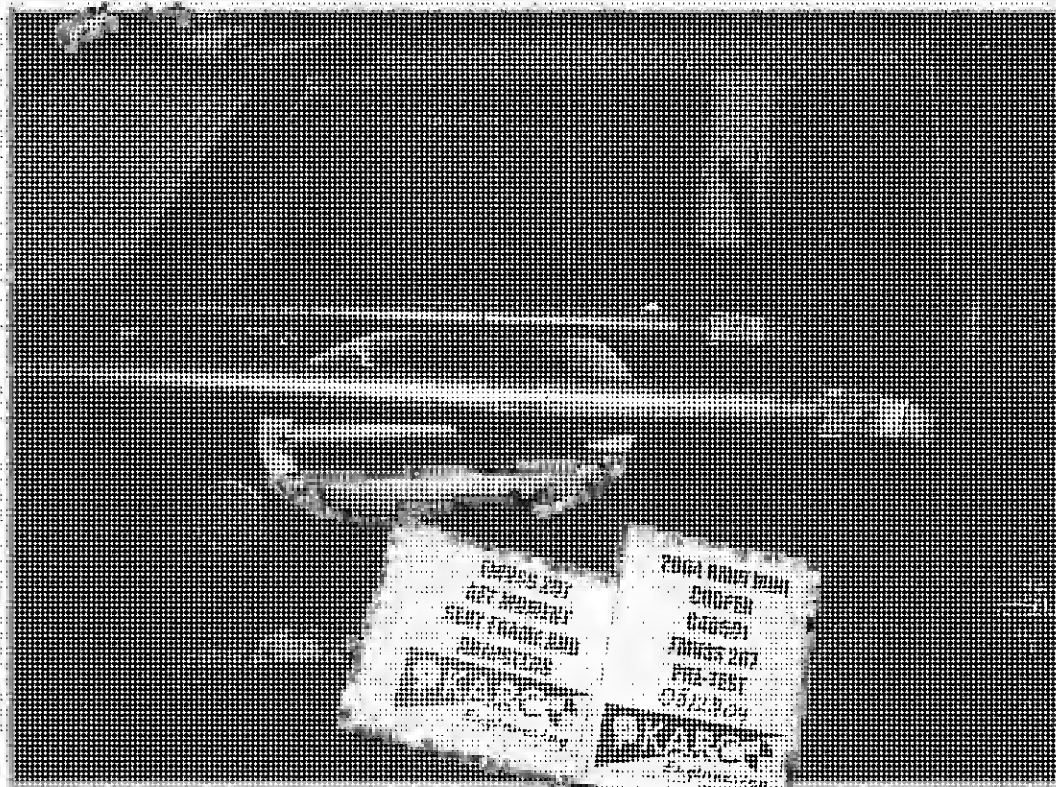


Figure A-11: Air Moment on Seat Frame and Adjusters, Driver's Side, Pre-Test

A-12

2007-10-29 04:00

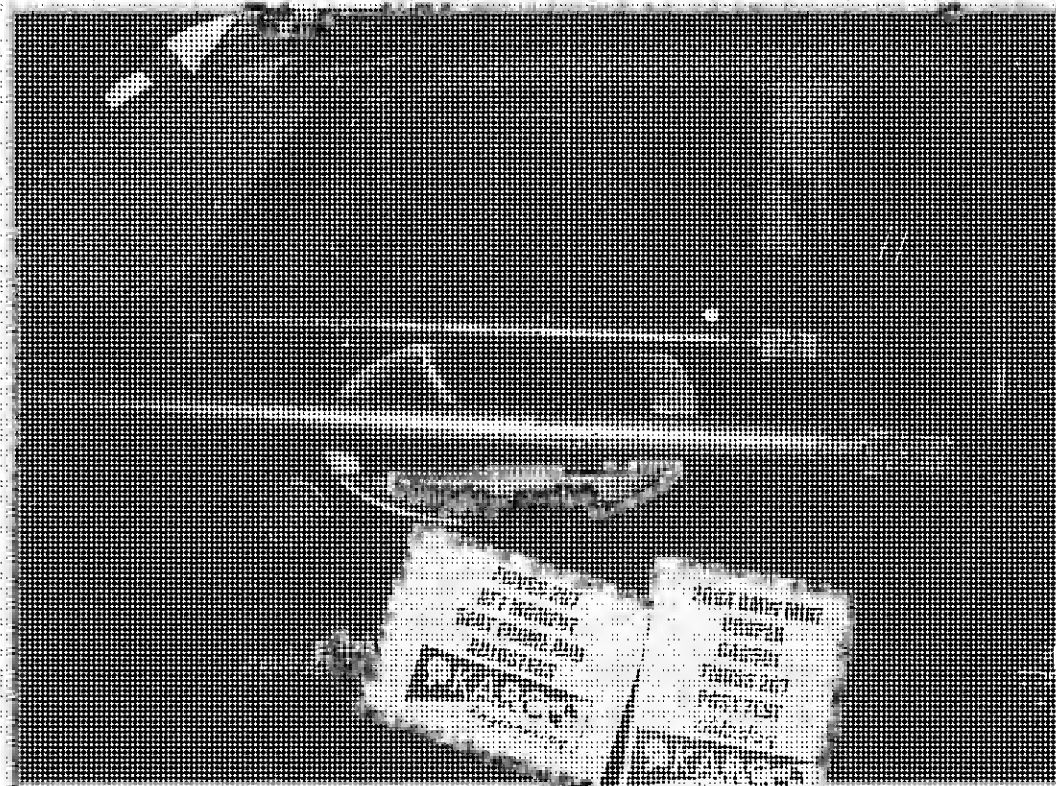


Figure A-12: Air Moment on Seat Frame and Adjusters, Driver's Side, Post-Test

A-13

207 KQ-3 04-001

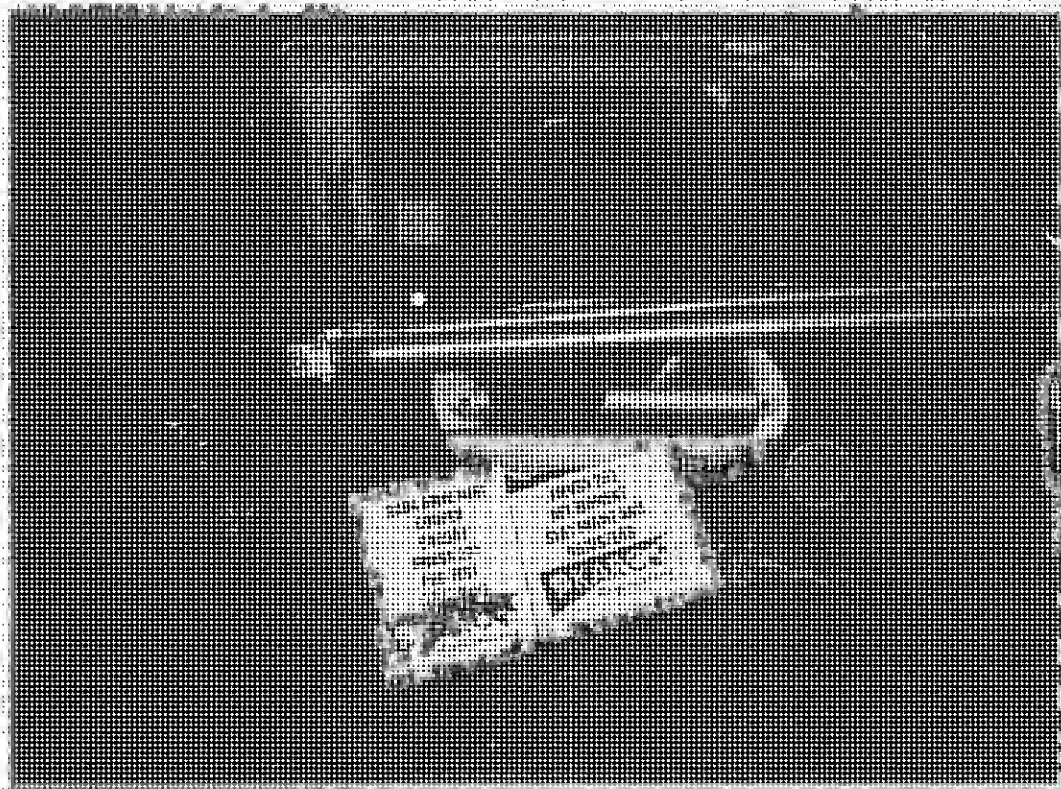


Figure A-13. All Movement on Seat Frame and Adjusters, Passenger's Side, Pre-Test

A-14

207 KQ-3 04-001

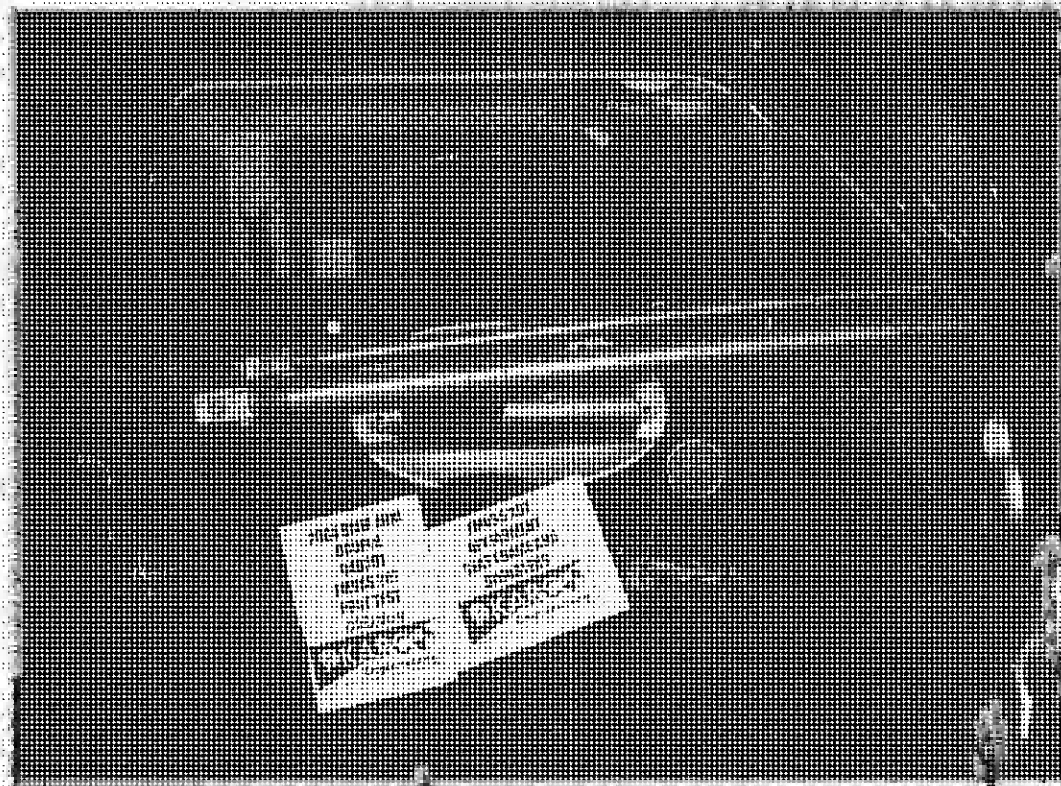


Figure A-14. All Movement on Seat Frame and Adjusters, Passenger's Side, Post-Test

A-15

207-15-10-06-001

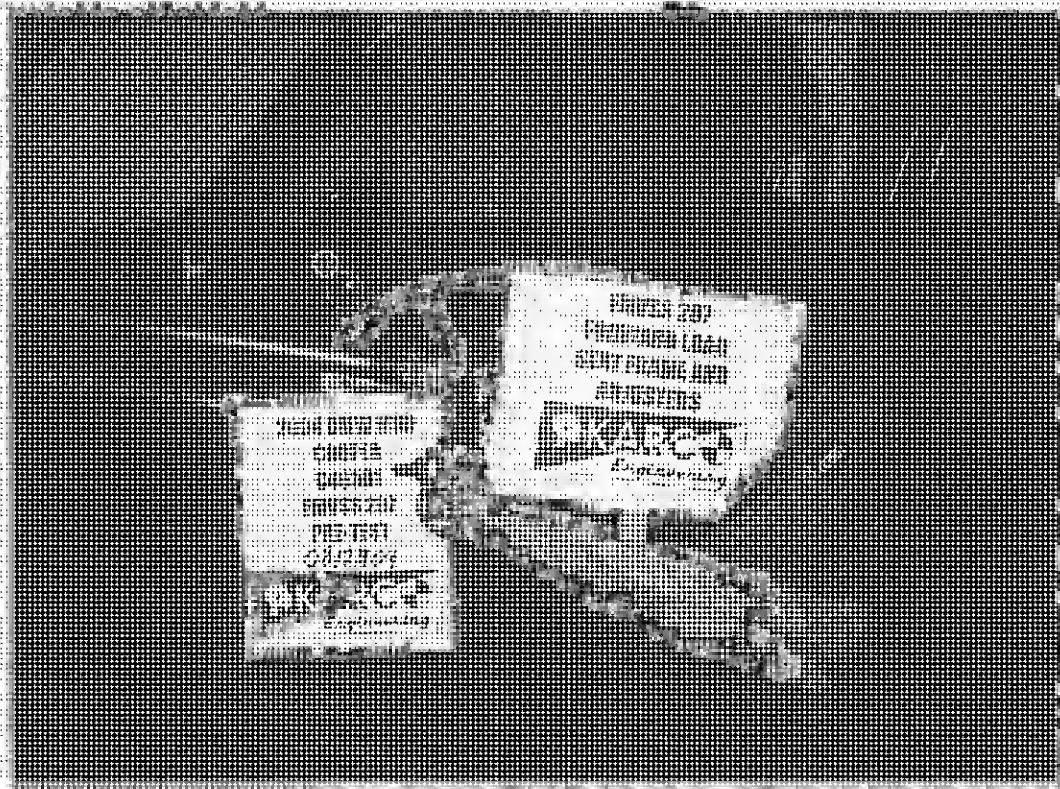


Figure A-15. Forward Load on Seat Assembly, Driver's Side, Pre-Test

A-16

207-15-10-06-001



Figure A-16. Forward Load on Seat Assembly Driver's Side, Post-Test

A-17

207-405-04-01

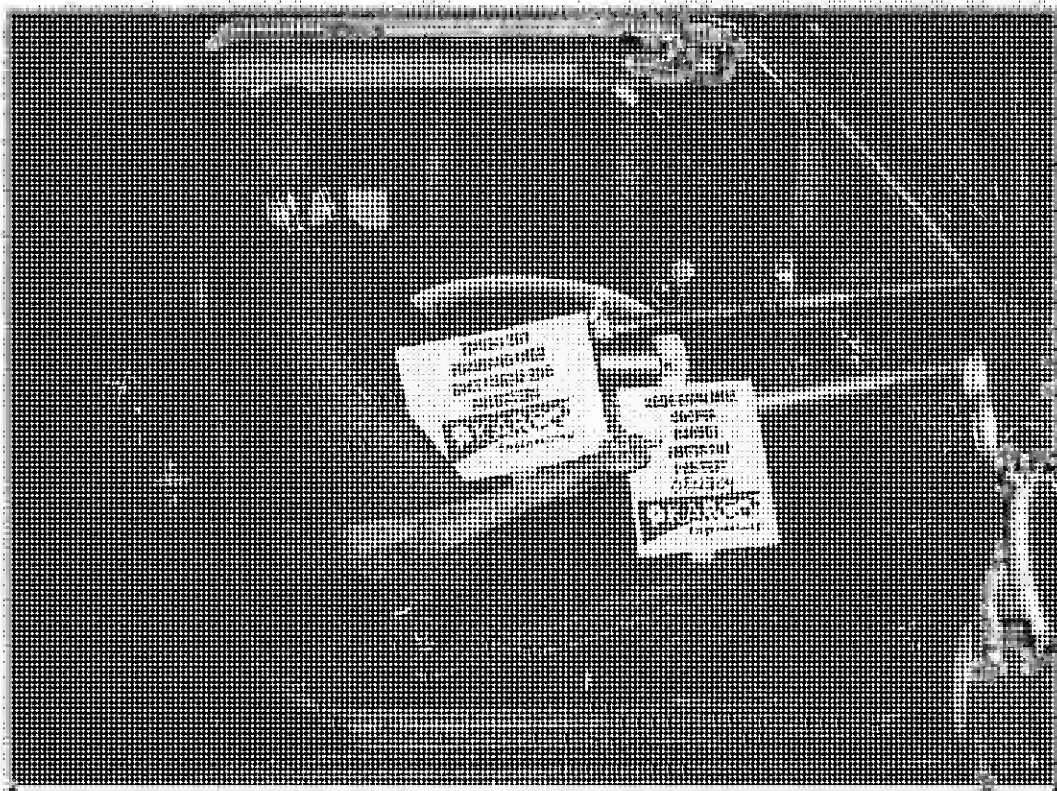


Figure A-17: Forward Load on Seat Assembly, Passenger's Side, Pre-Test

A-18

207-405-04-01

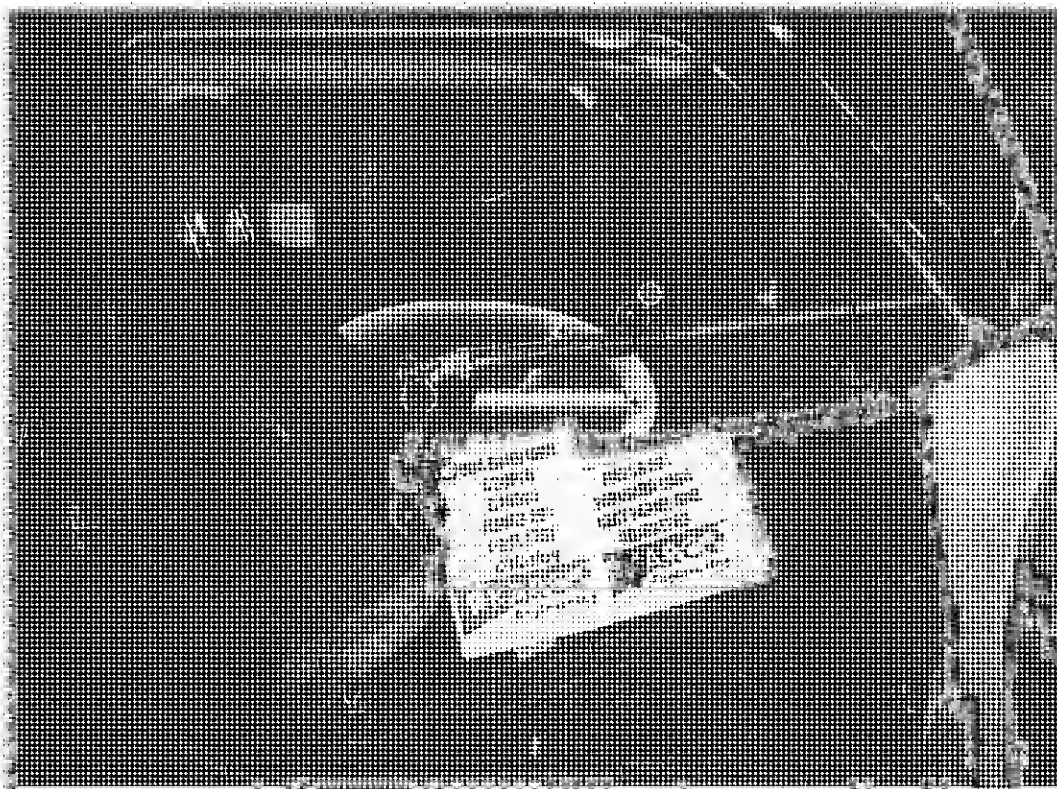


Figure A-18: Forward Load on Seat Assembly, Passenger's Side, Post-Test

A-19

200-448-4400

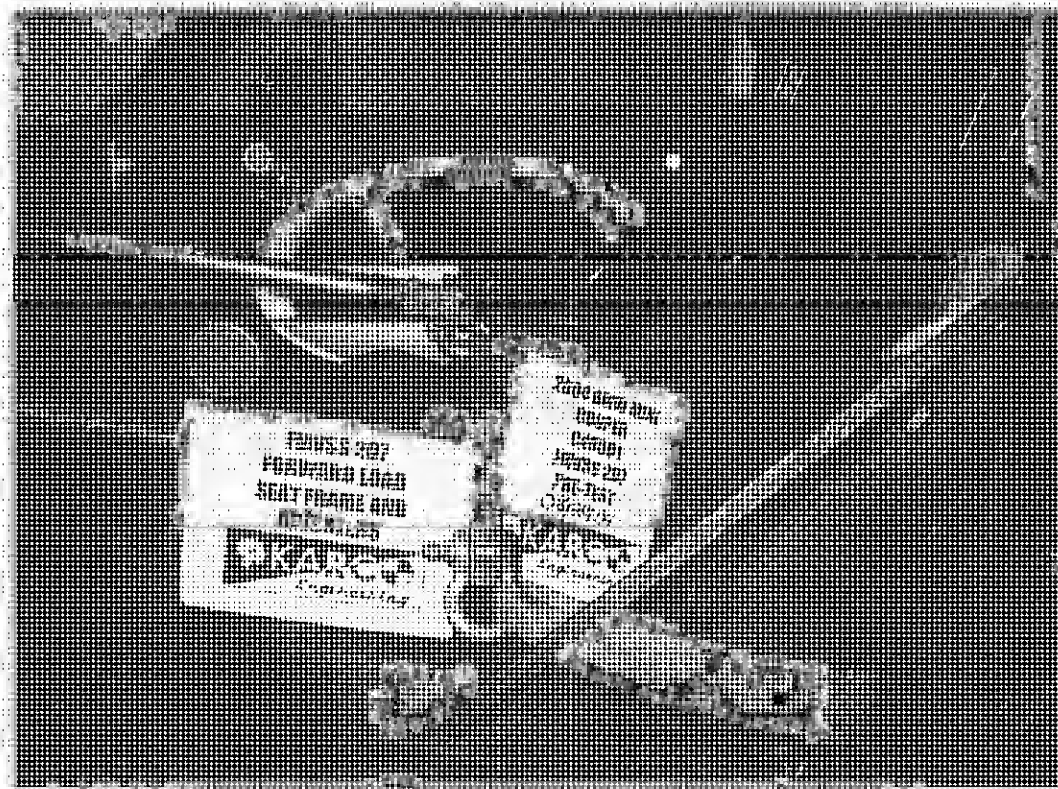


Figure A-19: Forward Load on Seat Frame and Adjusters, Driver's Side, Pre-Test

A-20

200-448-4400



Figure A-20: Forward Load on Seat Frame and Adjusters, Driver's Side, Post-Test

A-21

101-1038-00-001

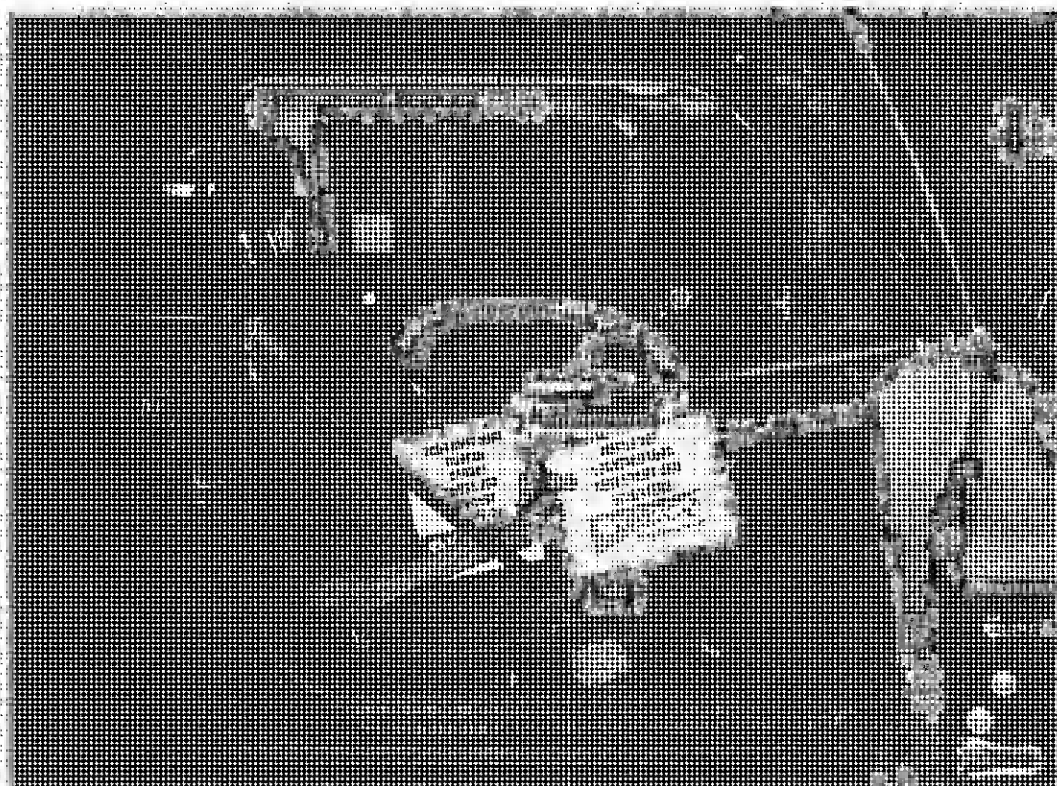


Figure A-21: Forward Load on Seat Frame and Adjusters, Passenger's Side, Pre-Test

A-22

101-1038-00-001

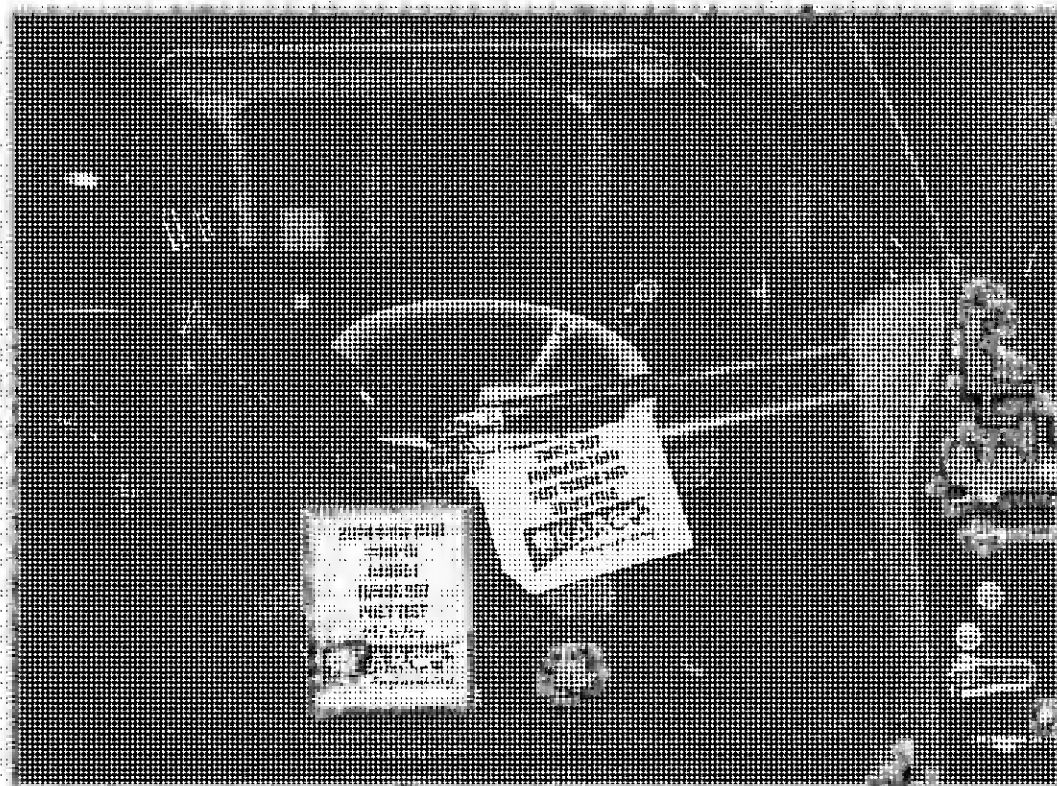


Figure A-22: Forward Load on Seat Frame and Adjusters, Passenger's Side, Post-Test

A-23

2007 K44H06 001

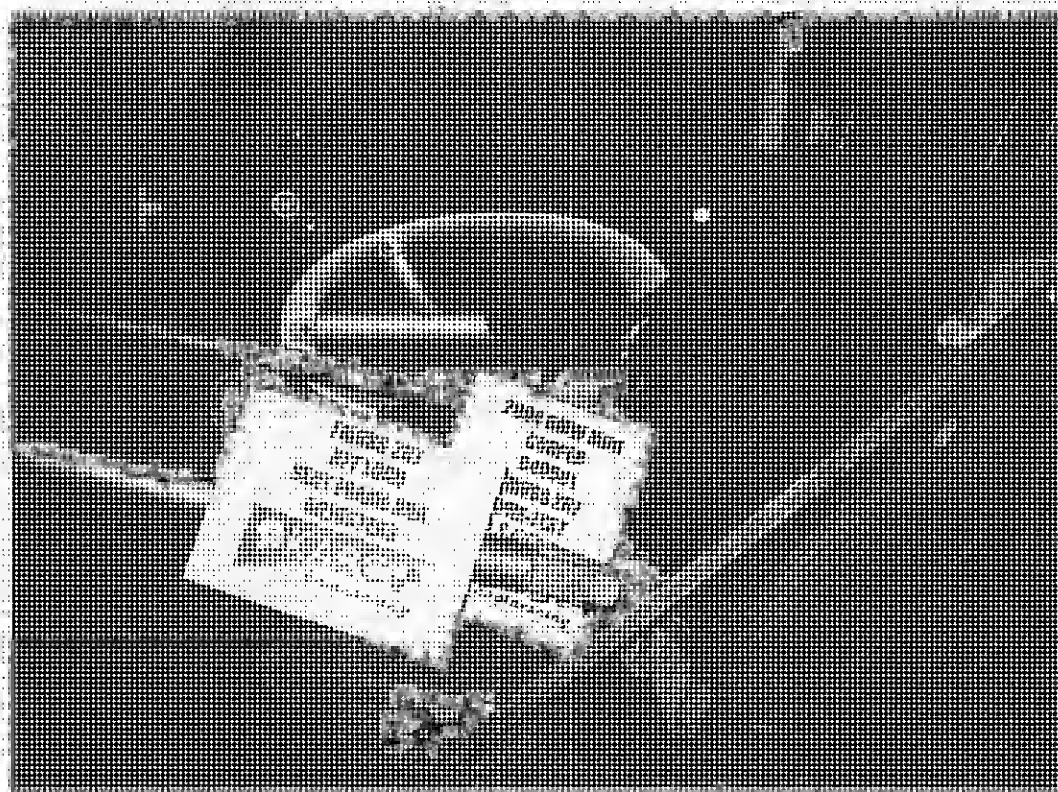


Figure A-23: All Load on Seat Frame and Adjusters, Driver's Side: Pre-Test

A-24

2007 K44H06 001

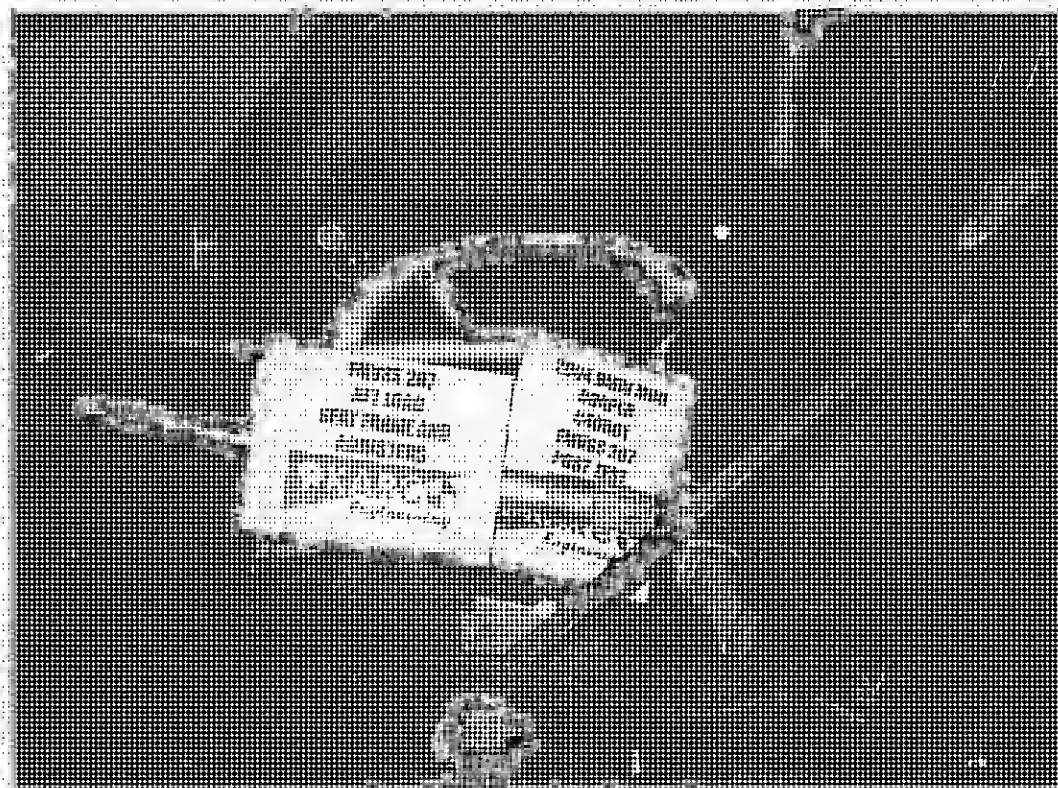


Figure A-24: All Load on Seat Frame and Adjusters, Driver's Side: Post-Test

A-25

2007-10-19 06:00

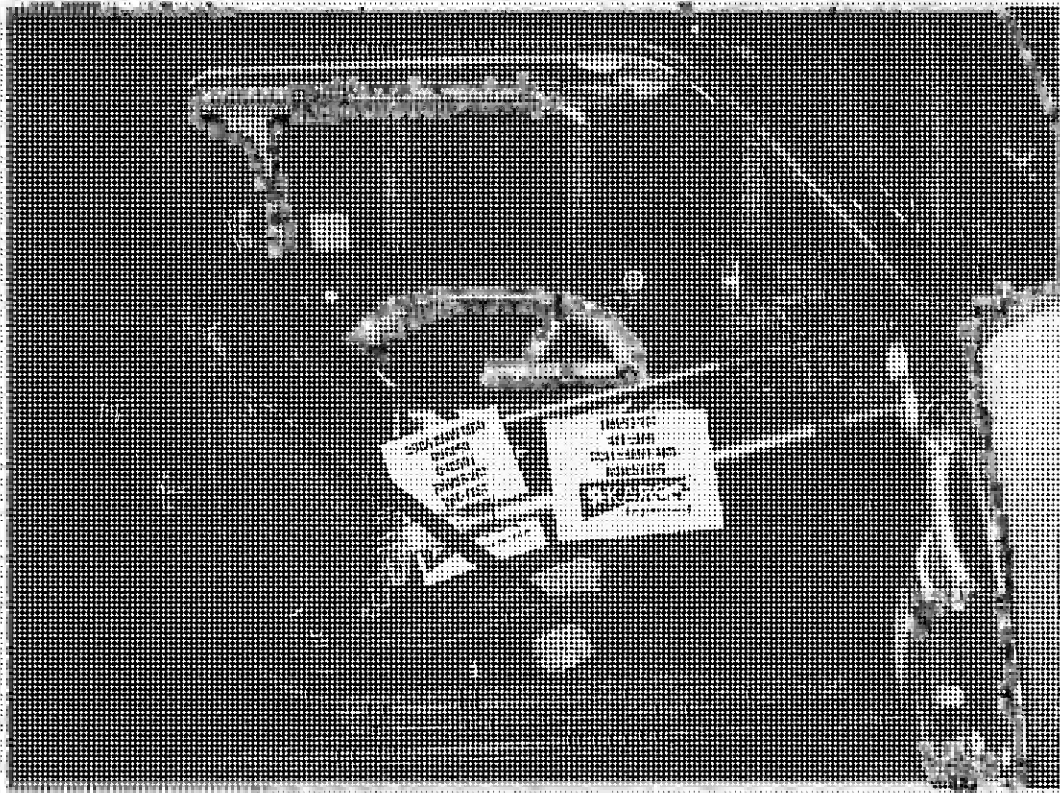


Figure A-25: A2 Load on Seat Frame and Adjusters, Passenger's Side, Pre-Test

A-26

2007-10-19 06:00

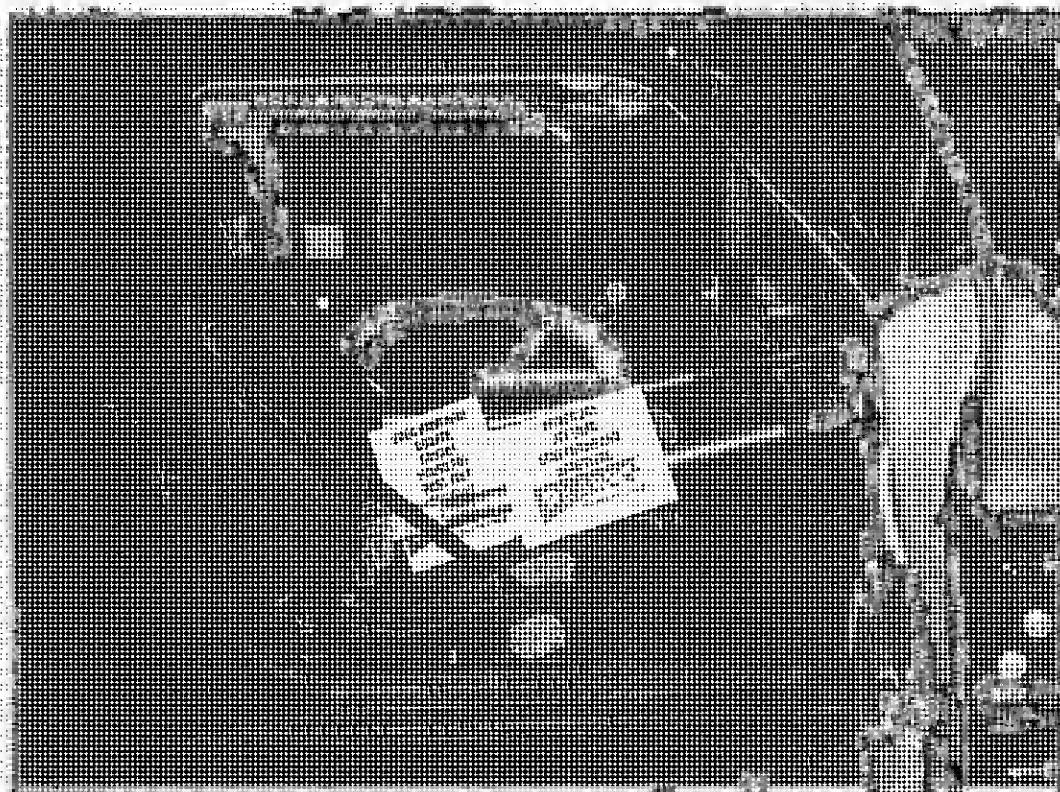


Figure A-26: A2 Load on Seat Frame and Adjusters, Passenger's Side, Post-Test

A-27

207-KAR-04-003

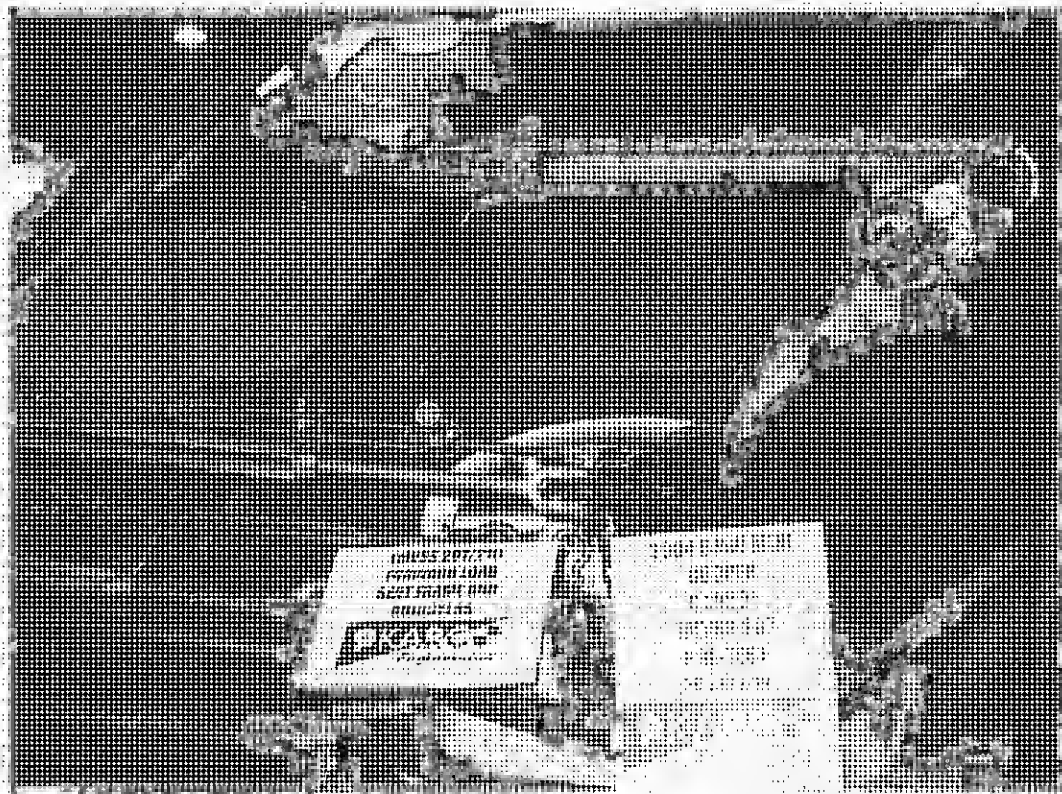


Figure A-27: 207/210 Forward Load on Seat Frame and Adjusters, Driver's Side, Pre-Test

A-28

207-KAR-04-003



Figure A-28: 207/210 Forward Load on Seat Frame and Adjusters, Driver's Side, Post-Test

A-25

207/10/2/04/001

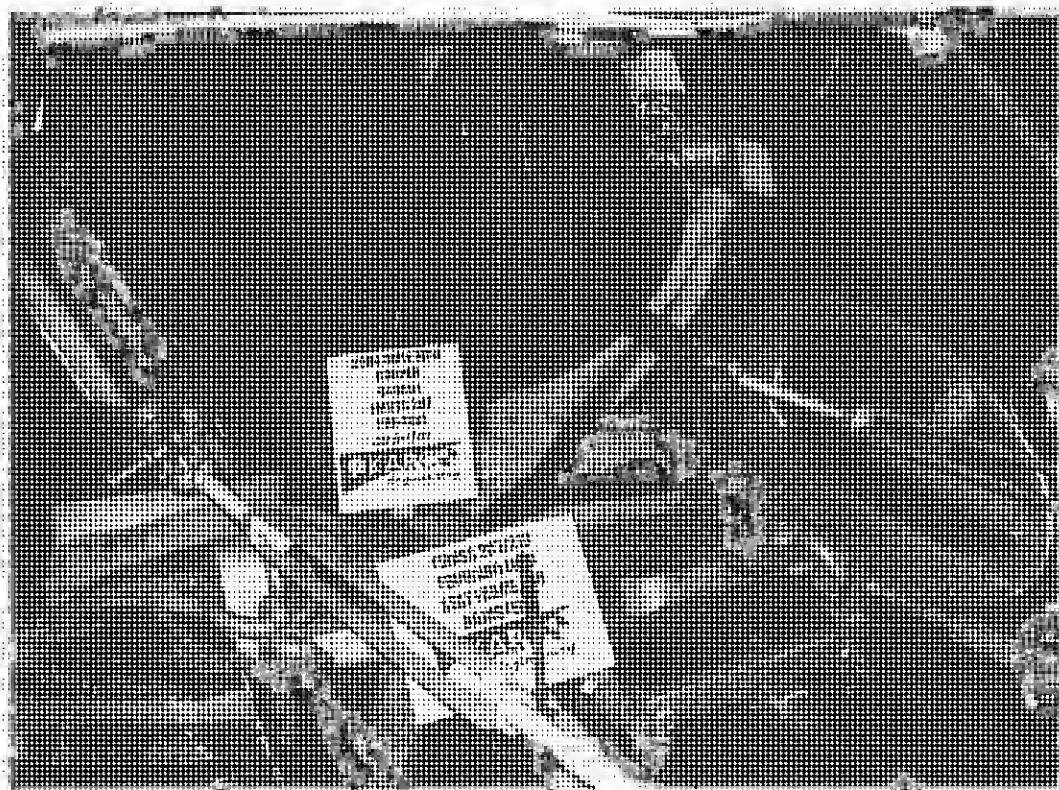


Figure A-25: 207/210 Forward Load on Seat Frame and Adjusters, Driver's Side, Pre-Test

A-26

207/10/2/04/001

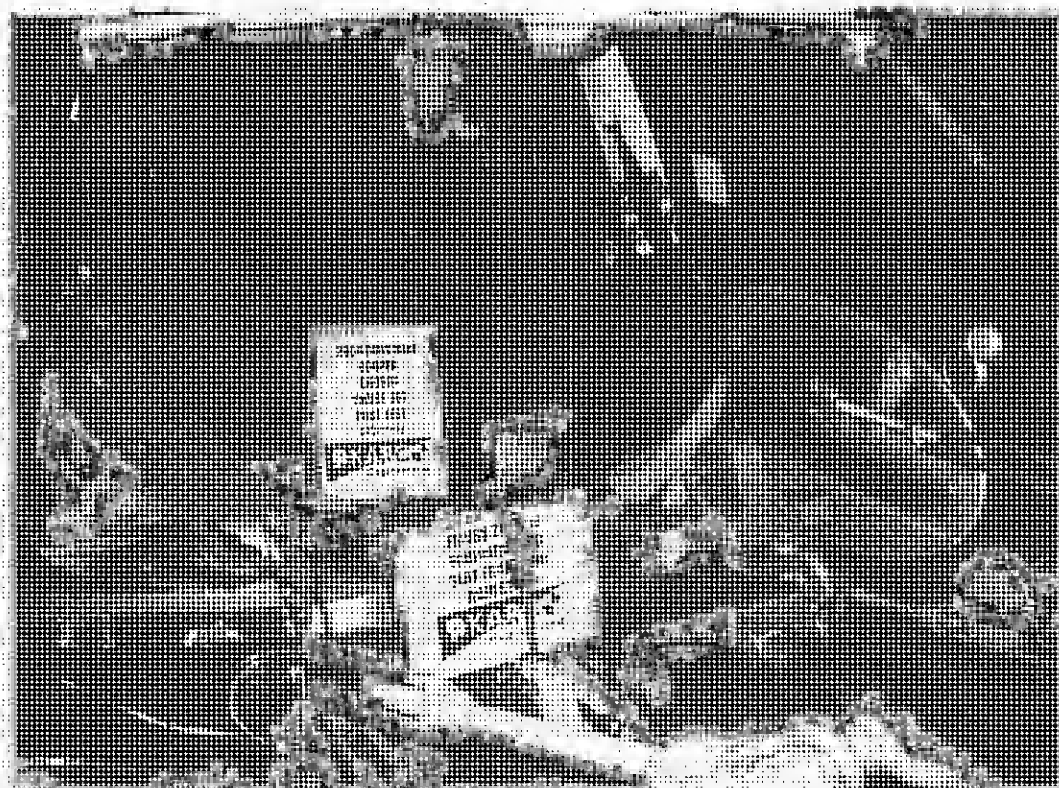


Figure A-26: 207/210 Forward Load on Seat Frame and Adjusters, Driver's Side, Post-Test

A-35

207/210-04-001

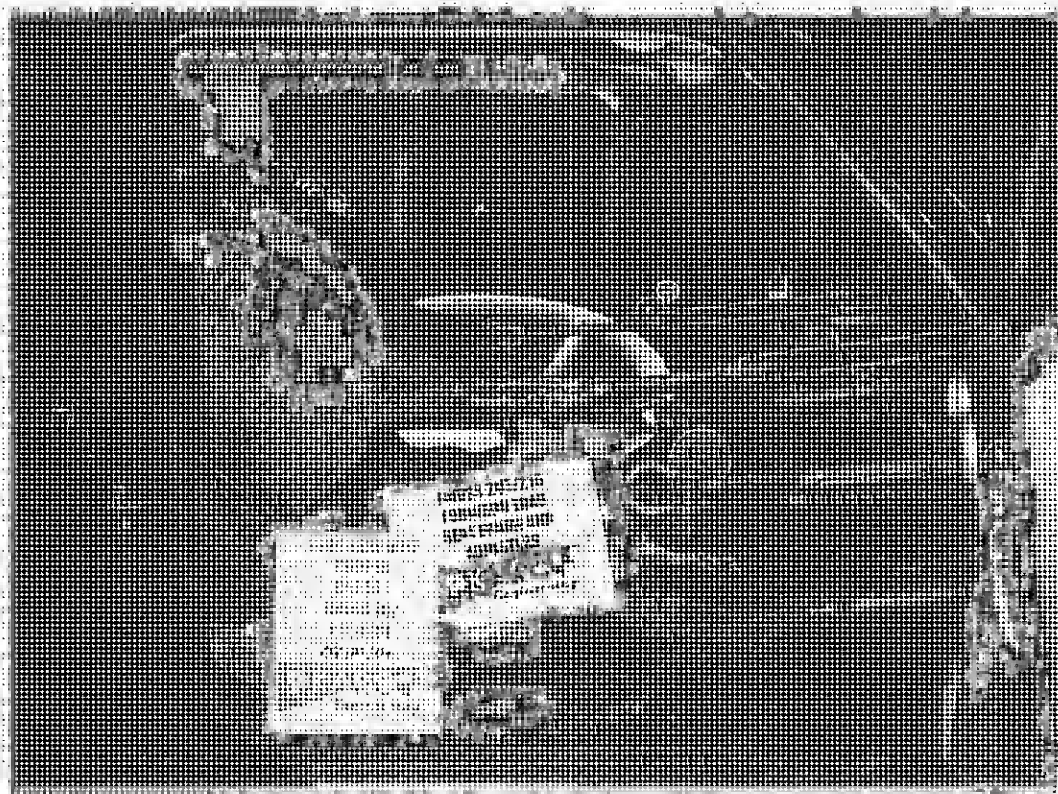


Figure A.31: 207/210 Forward Load on Seat Frame and Adjusters, Passenger's Side, Pre-Test

A-36

207/210-04-001



Figure A.32: 207/210 Forward Load on Seat Frame and Adjusters, Passenger's Side, Post-Test

A-33

207/210-01-01

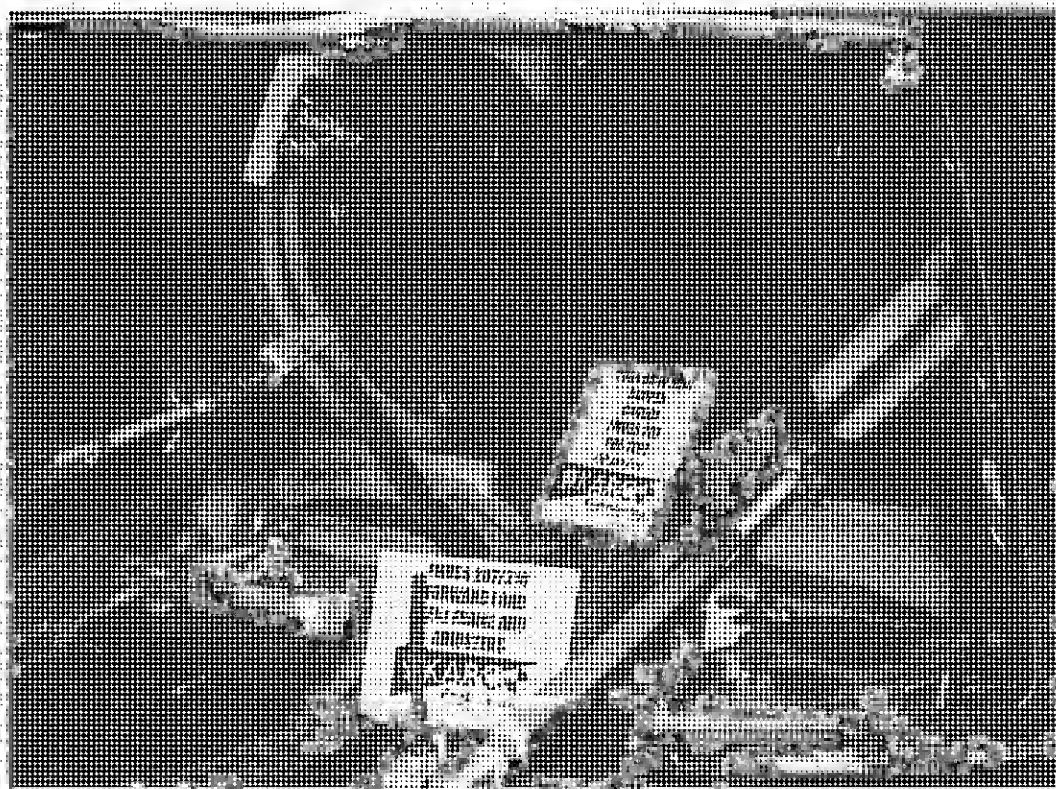


Figure A-33: 207/210 Forward Load on Seat Frame and Adjusters, Passenger's Side, Pre-Test

A-34

207/210-01-01



Figure A-34: 207/210 Forward Load on Seat Frame and Adjusters, Passenger's Side, Post-Test

A-35

207-106-21-001

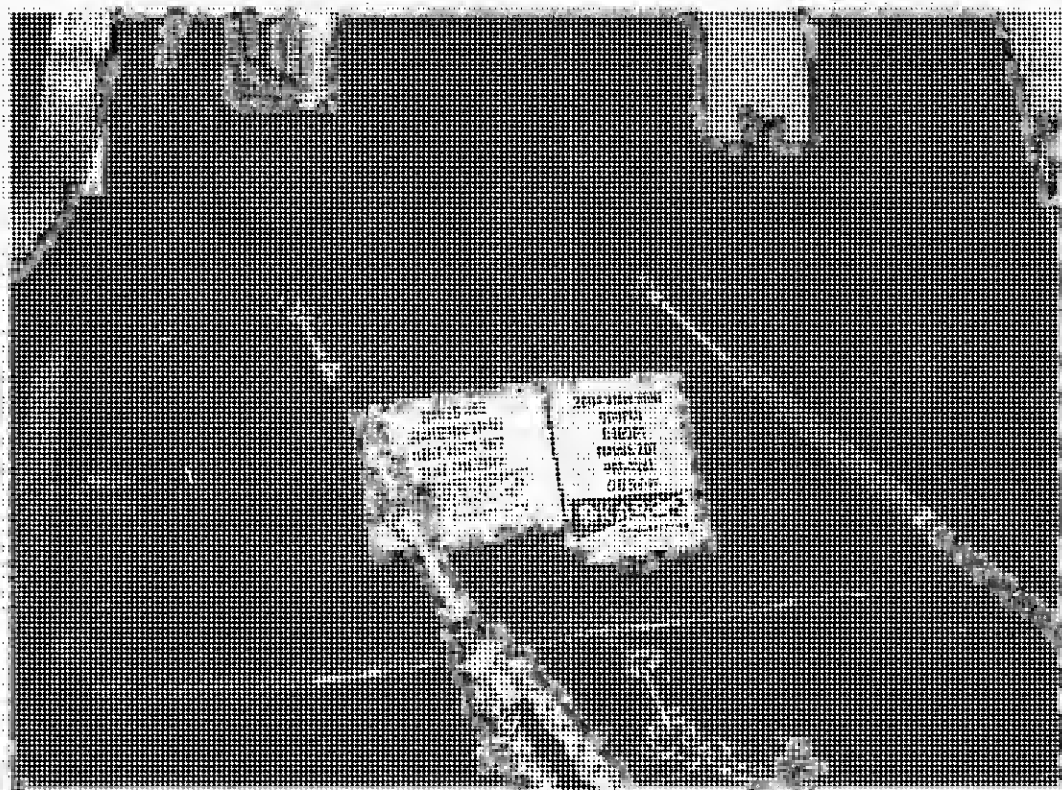


Figure A-35: Forward Load on Seat Back and Seat Cushion, Driver's Side Rear, Pre-Test

A-36

207-106-21-001

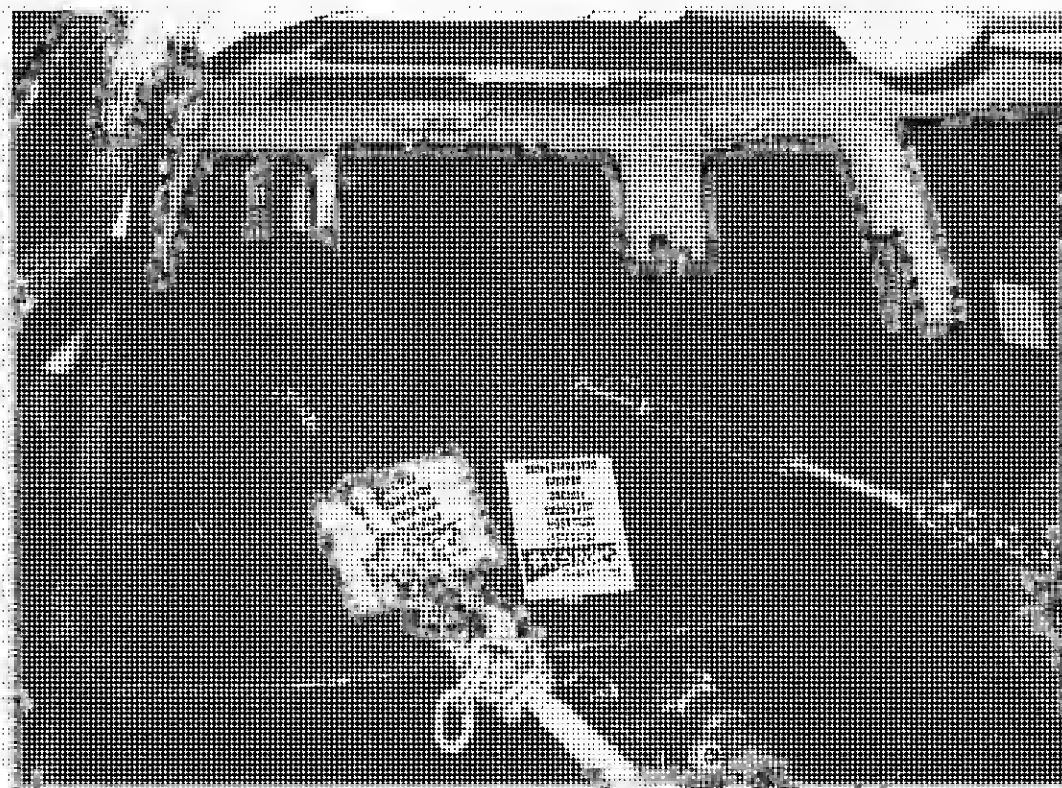


Figure A-36: Forward Load on Seat Back and Seat Cushion, Driver's Side Rear, Post-Test

A-37

227 X018 04.001



Figure A-37. Forward Load on Seat Back and Seat Cushion, Passenger's Side Rear, Pre-Test

A-38

227 X018 04.001

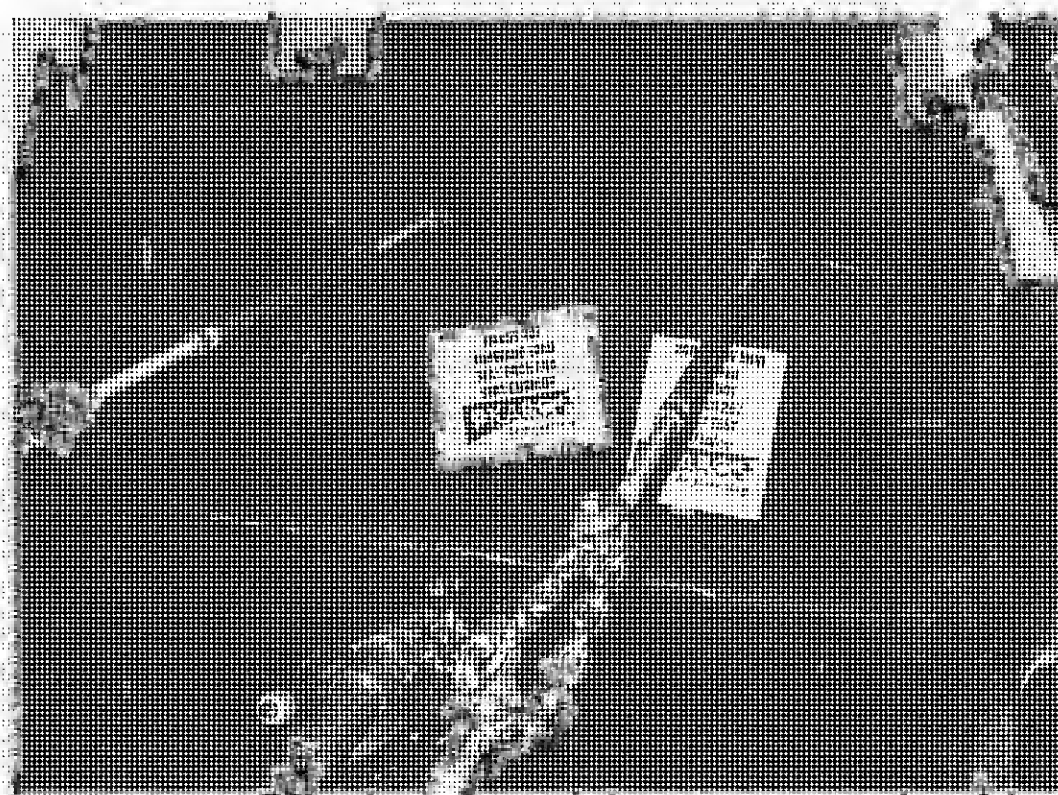


Figure A-38. Forward Load on Seat Back and Seat Cushion, Passenger's Side Rear, Post-Test

4-39

201603081

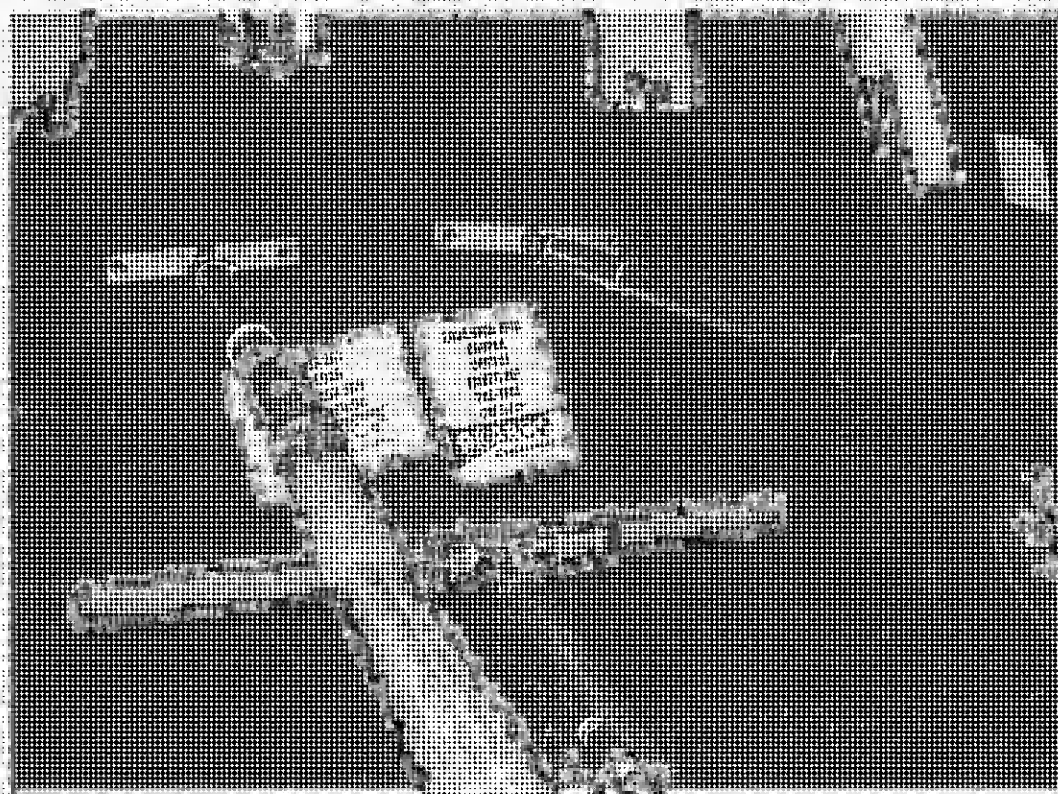


Figure A-33: Alt Load on Seat Back and Seat Cushion, Driver's Side Rear, Pre-Test

4-40

201603081

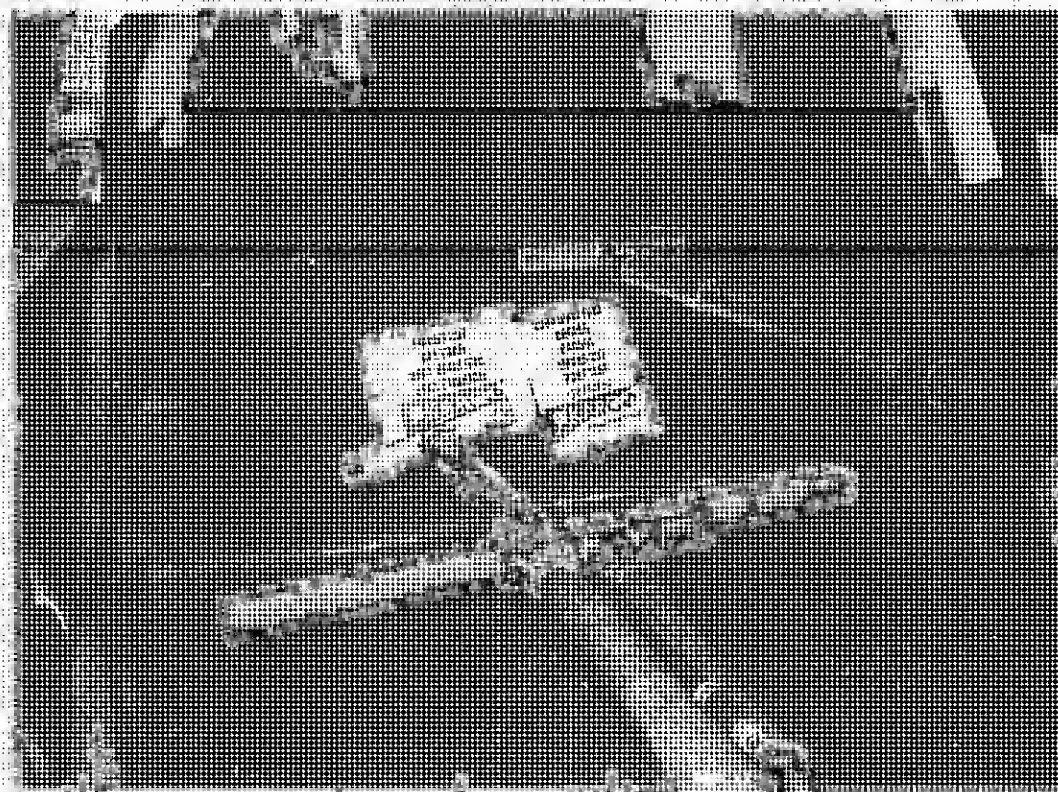


Figure A-34: Alt Load on Seat Back and Seat Cushion, Driver's Side Rear, Post-Test

A-41

207 KAR 08 001

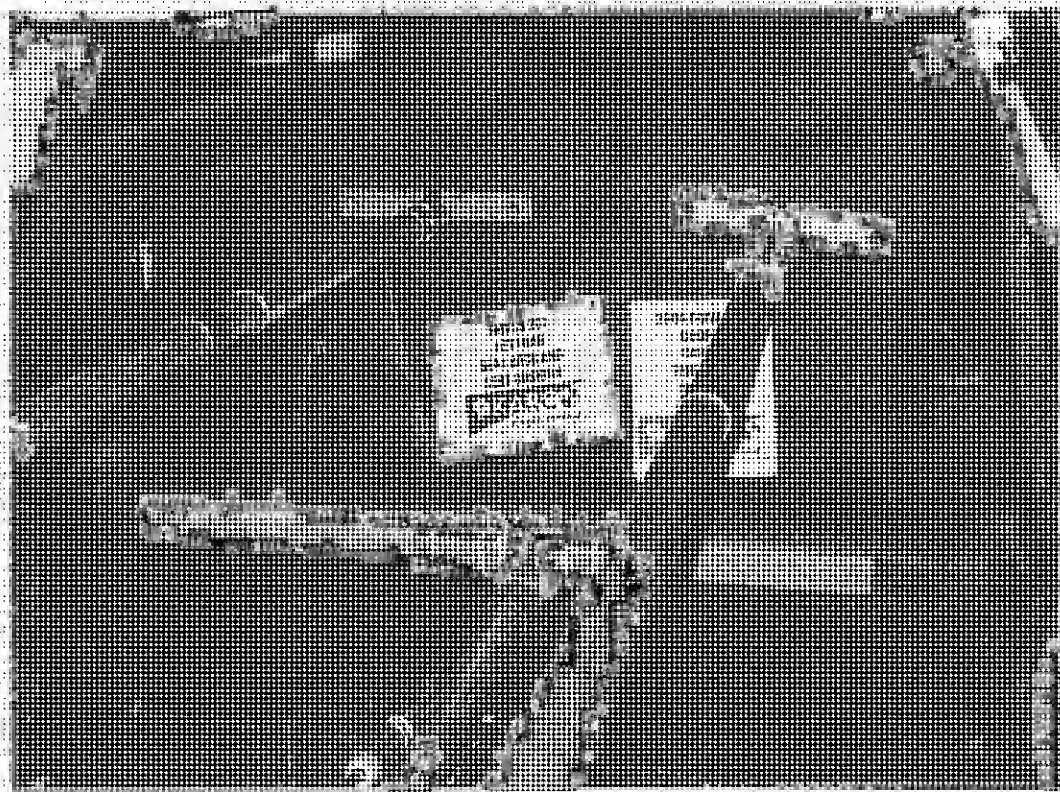


Figure A-41: Air Load on Seat Back and Seat Cushion, Passenger's Side Rear, Pre-Test

A-42

207 KAR 08 001

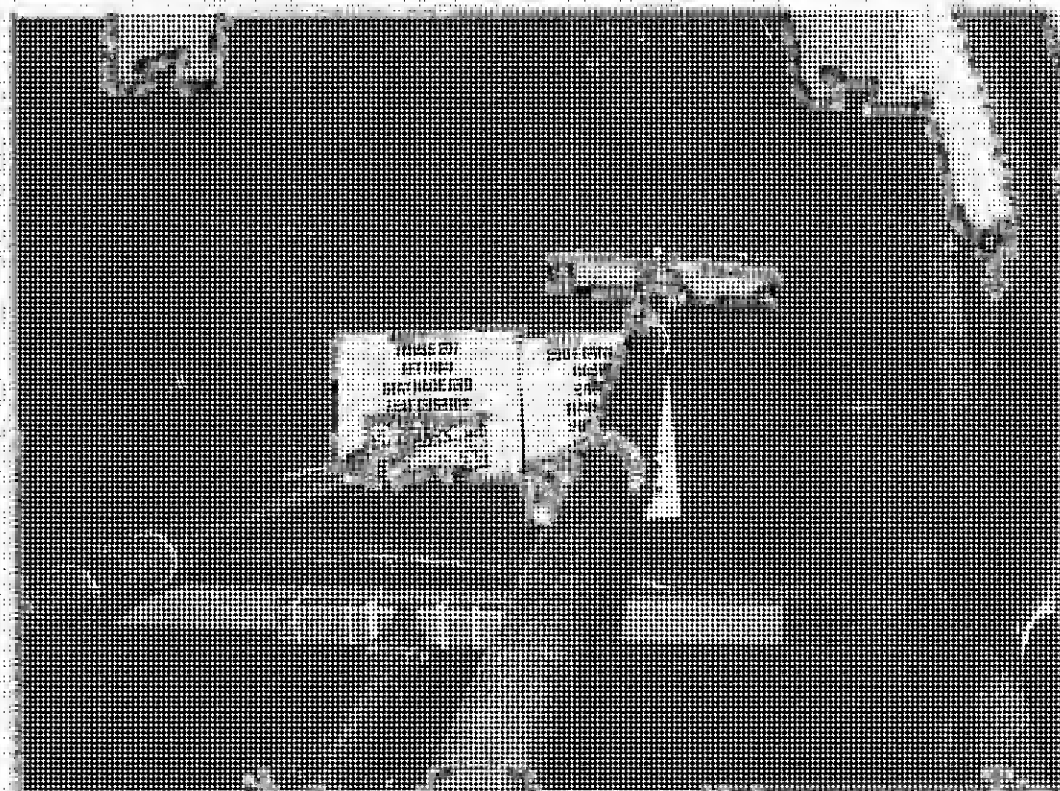


Figure A-42: Air Load on Seat Back and Seat Cushion, Passenger's Side Rear, Post-Test

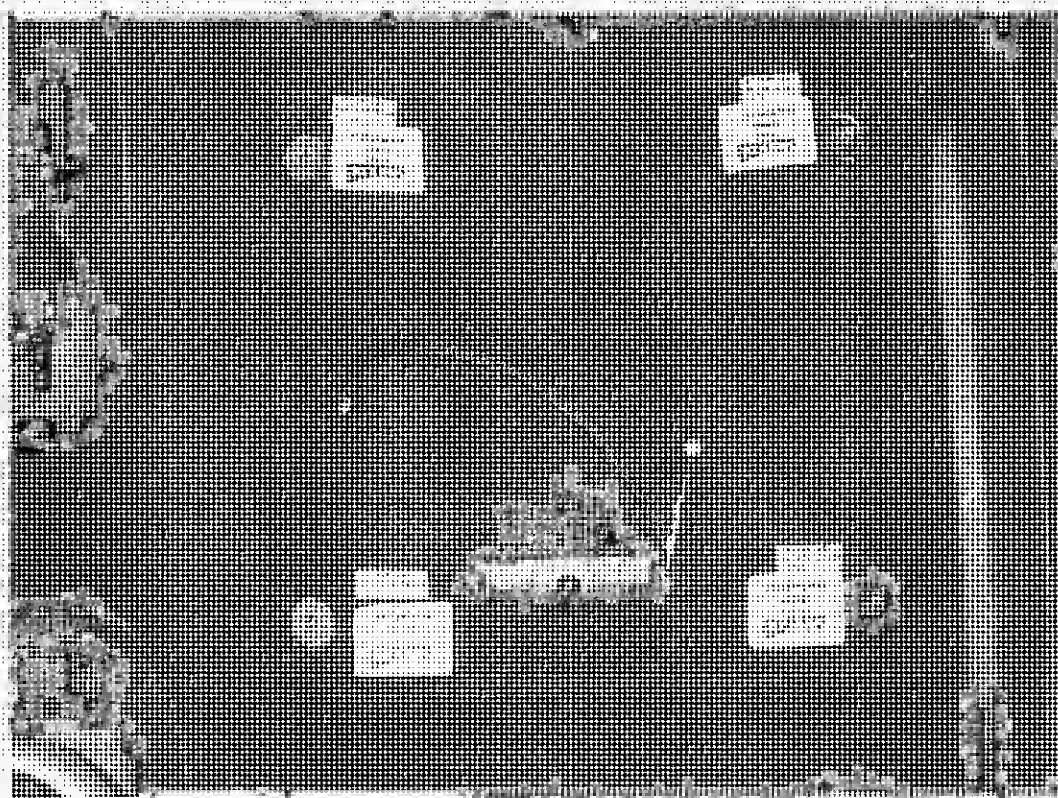


Figure A-43: Floor Pan Anchors, Left Front Seat Overall, Pre-Test

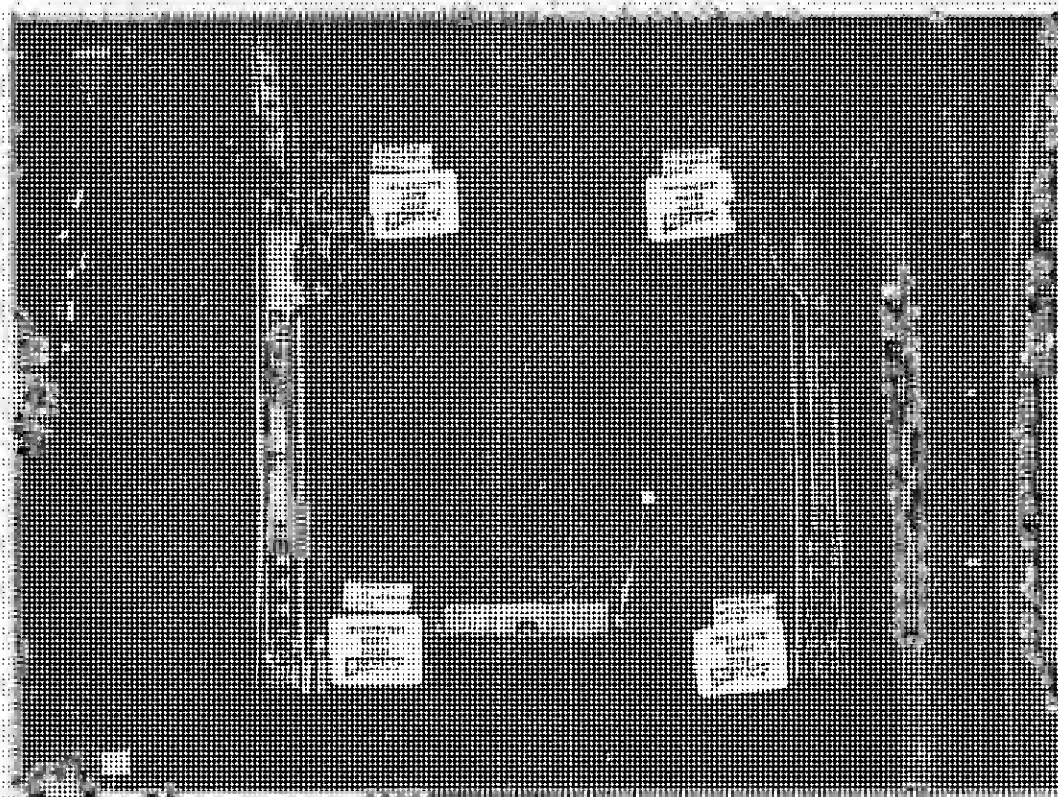


Figure A-44: Floor Pan Anchors, Left Front Seat Overall, Post-Test (with Seat Tracks still in place)

A-45

207 KAR 04 301

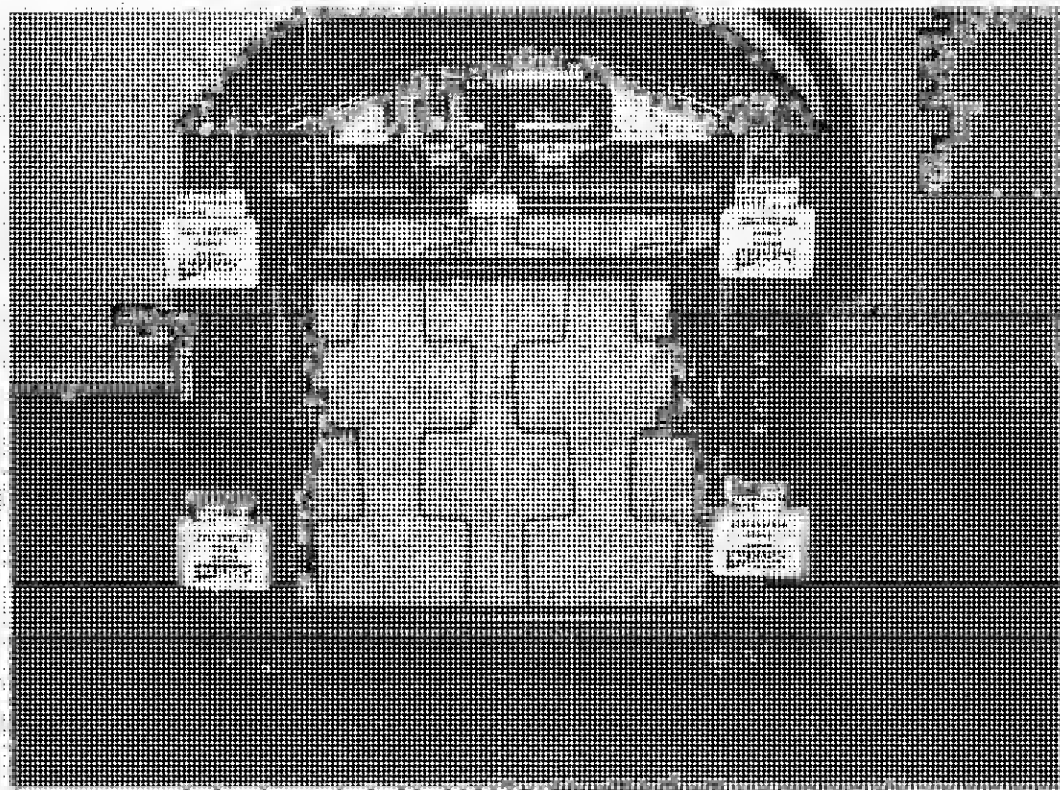


Figure A-45: Seaf Anchors, Left Front Seaf Overall, Pre-Test

A-46

207 KAR 04 301

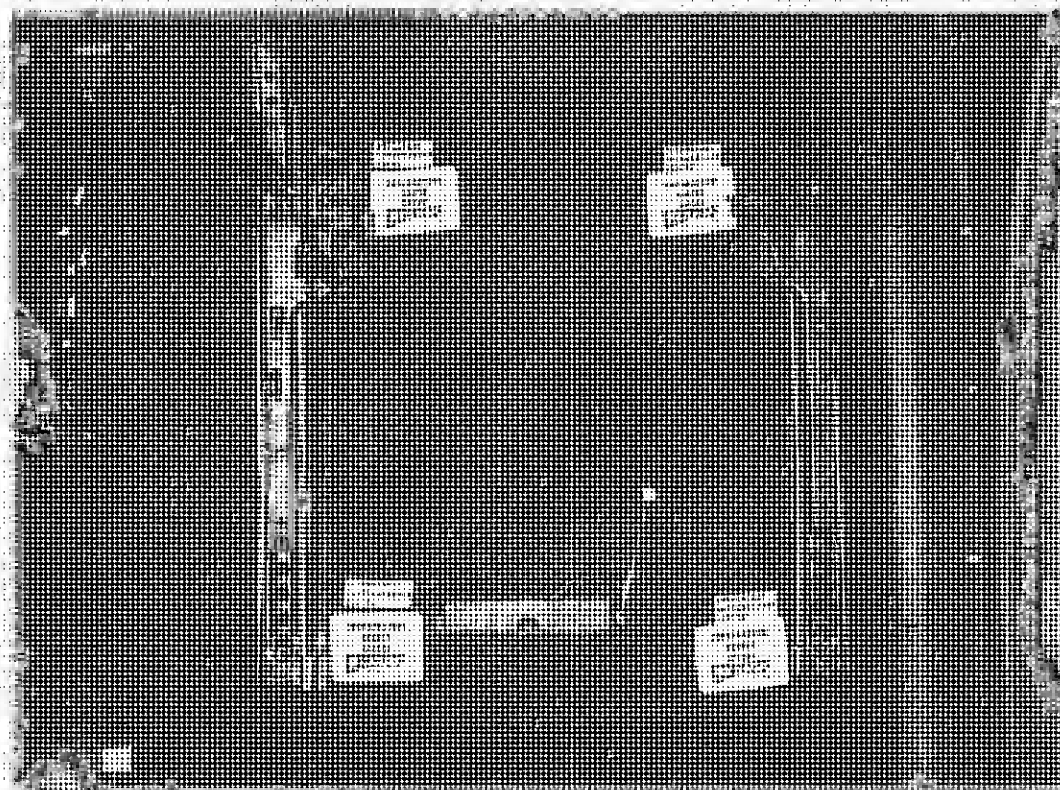


Figure A-46: Seaf Anchors, Left Front Seaf Overall, Post-Test (With Seaf Tracks in place)

ADDY

223 KAR 04 001

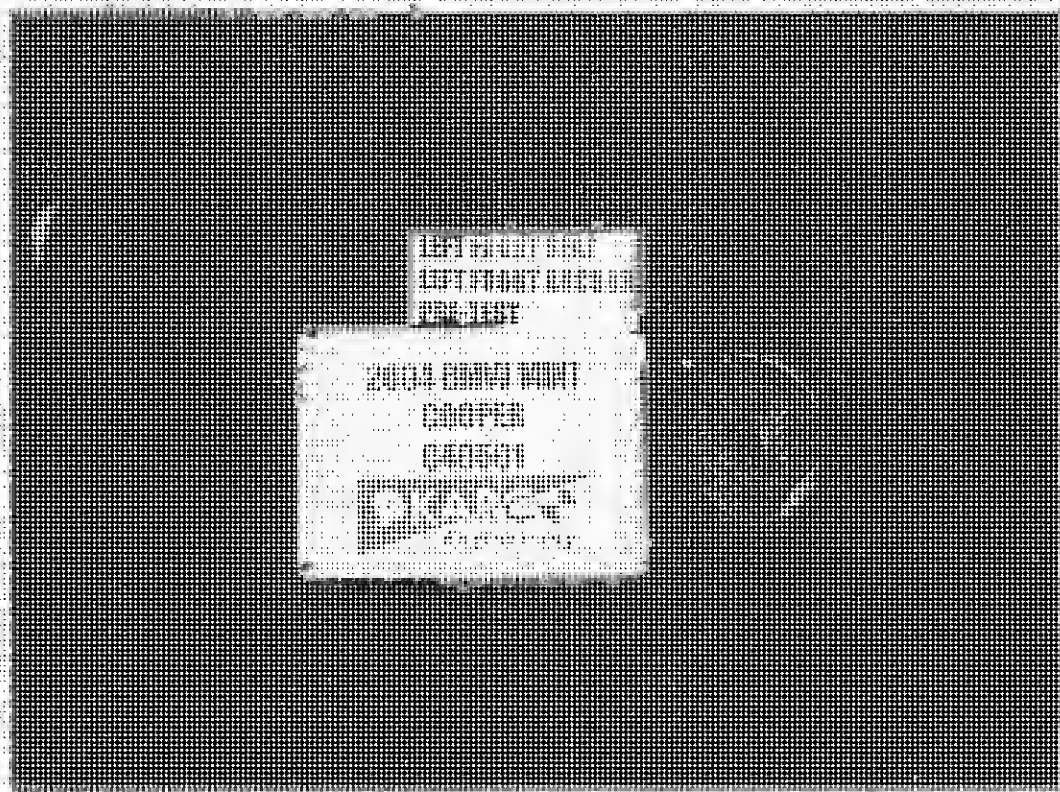


Figure A-17: Floor Pan Anchor, Left Front Seat, Pre-Test

ADDY

223 KAR 04 001

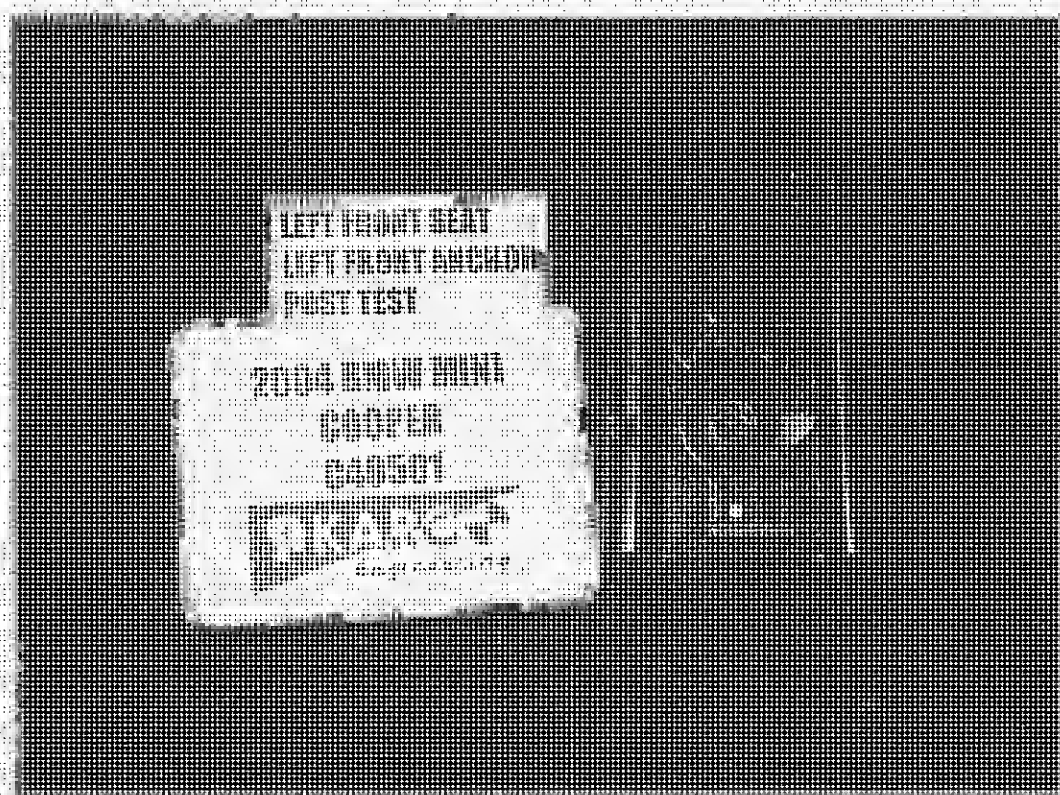


Figure A-18: Floor Pan Anchor, Left Front Seat, Post-Test (VW's Seat Tracks are in place)

A-51

2004-04-01



Figure A-51: Floor Pan Anchor, Left Front Seat, Pre-Test

A-52

2004-04-01

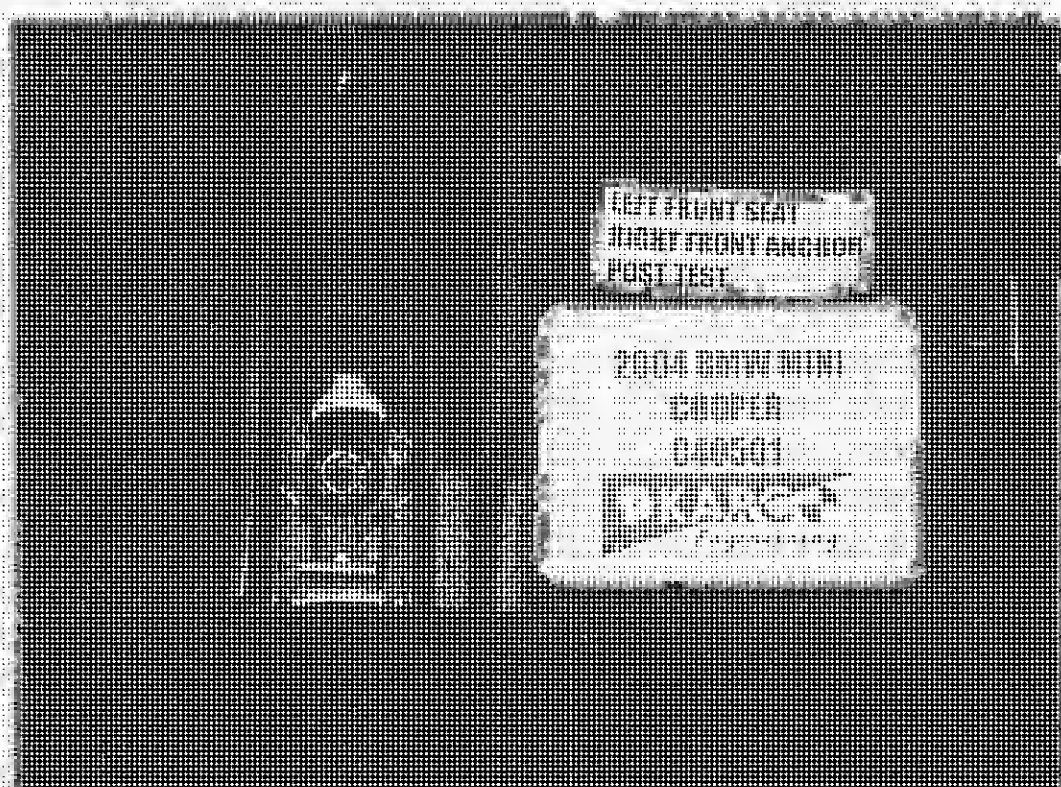


Figure A-52: Floor Pan Anchor, Left Front Seat, Post-Test (WCS Seat Tracks off in place)

A-53

CONV-04-003

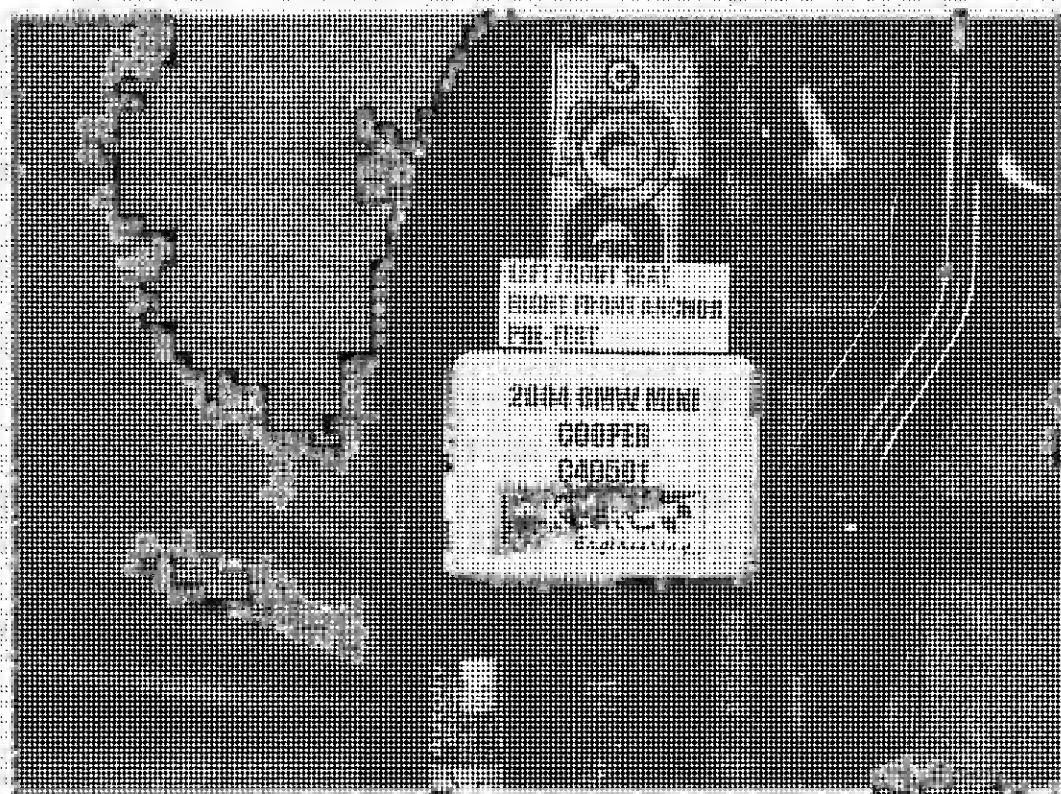


Figure A-53: Seat Anchor, Left Front Seat, Pre-Test

A-54

CONV-04-003



Figure A-54: Seat Anchor, Left Front Seat, Post-Test (After Seat Tracks Shift in Place)

A-55

2004-09-04-001



Figure A-55: Front Pan Anchor, Left Front Seat, Pre-Test

A-56

2004-09-04-001

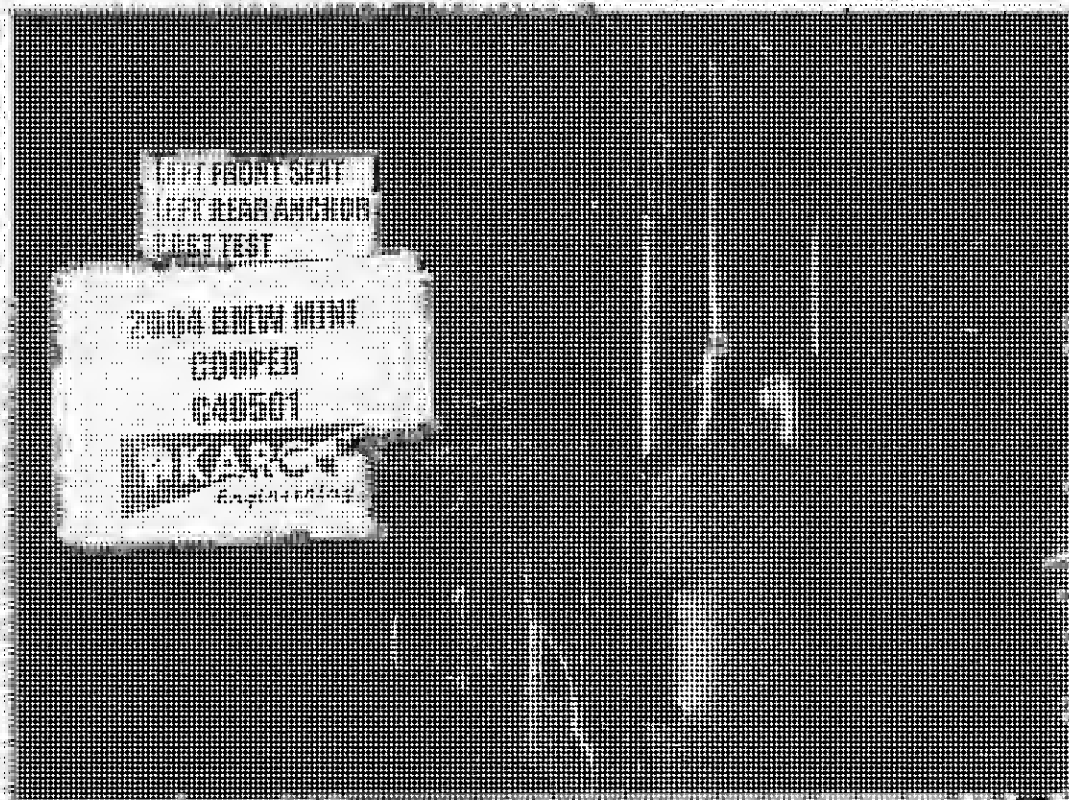


Figure A-56: Front Pan Anchor, Left Front Seat, Post-Test (With Seat Tracks Still in Place)

A-57

2013-01-01

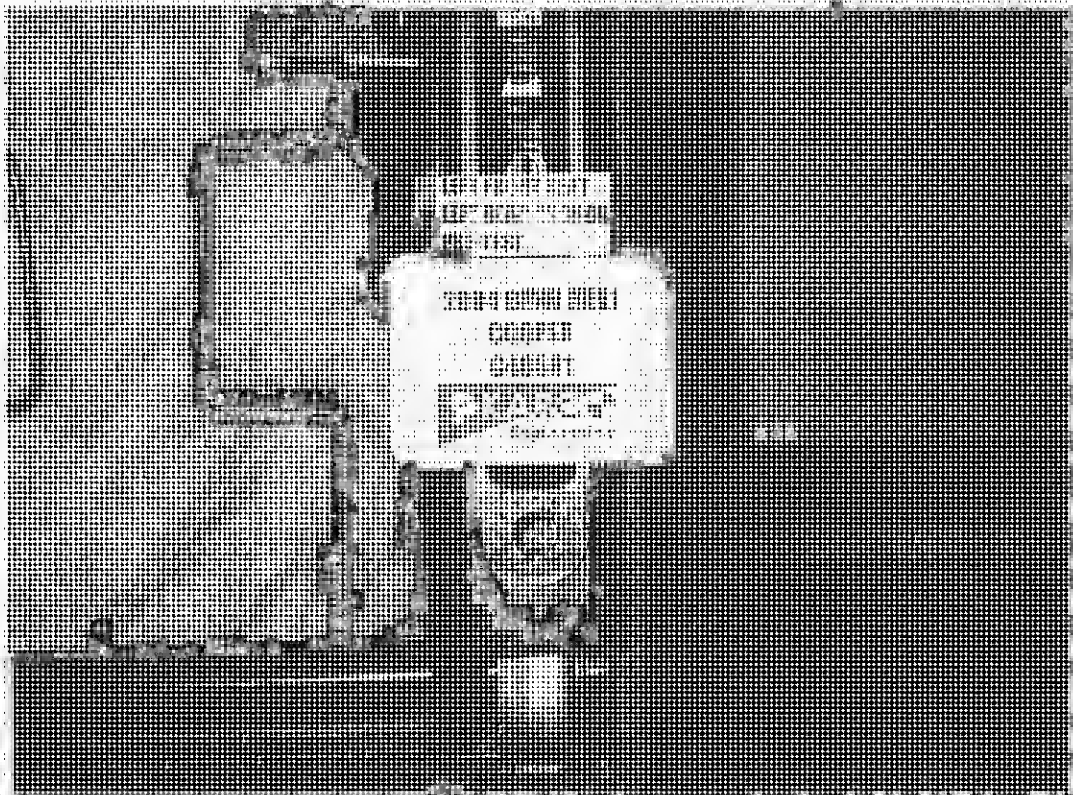


Figure A-57. Seal Anchor, Left Front Seat, Pre-Test

A-58

2013-01-01

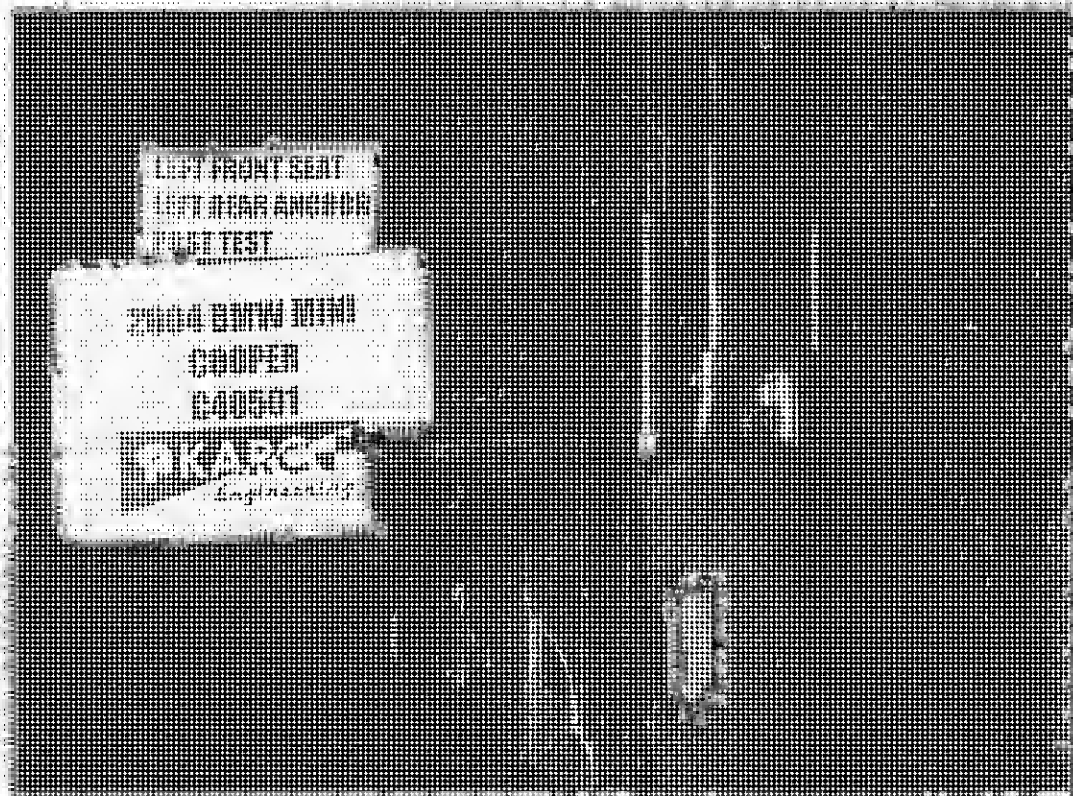


Figure A-58. Seal Anchor, Left Front Seat, Post-Test (With Seat Tracks Slit Plate)

A-58

2004-04-04-001

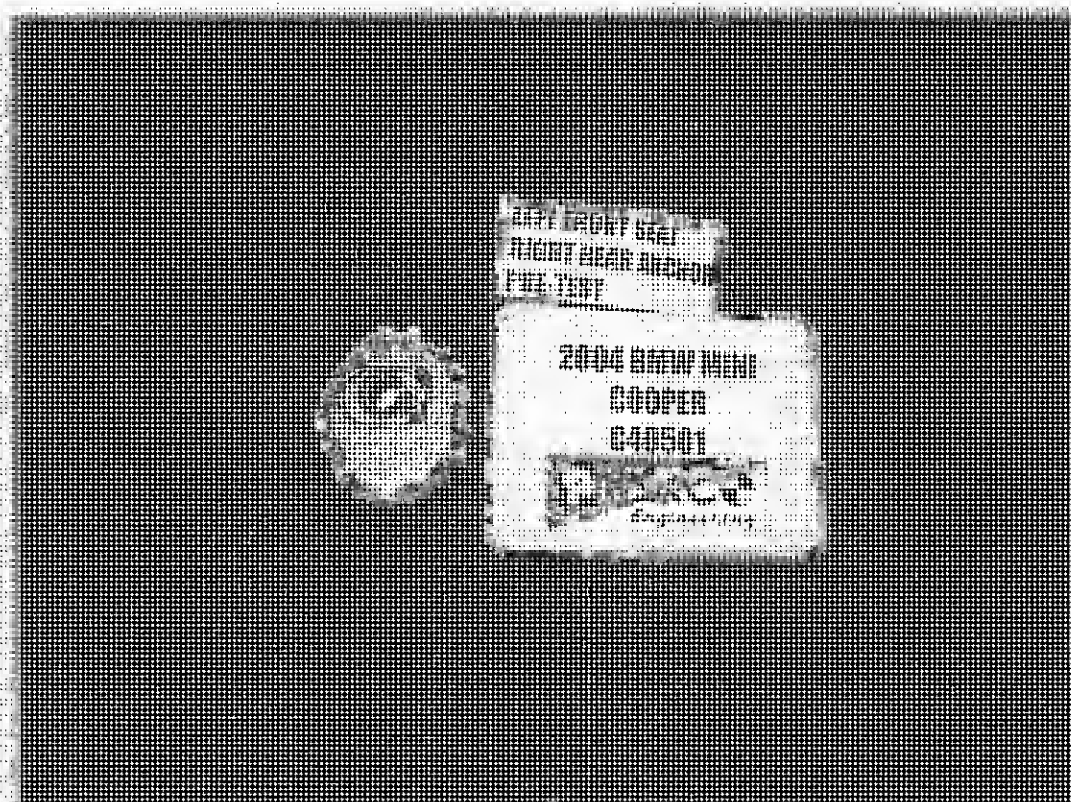


Figure A-58: Floor Pan Anchor, Left Front Seat, Pre-Test

A-59

2004-04-04-002

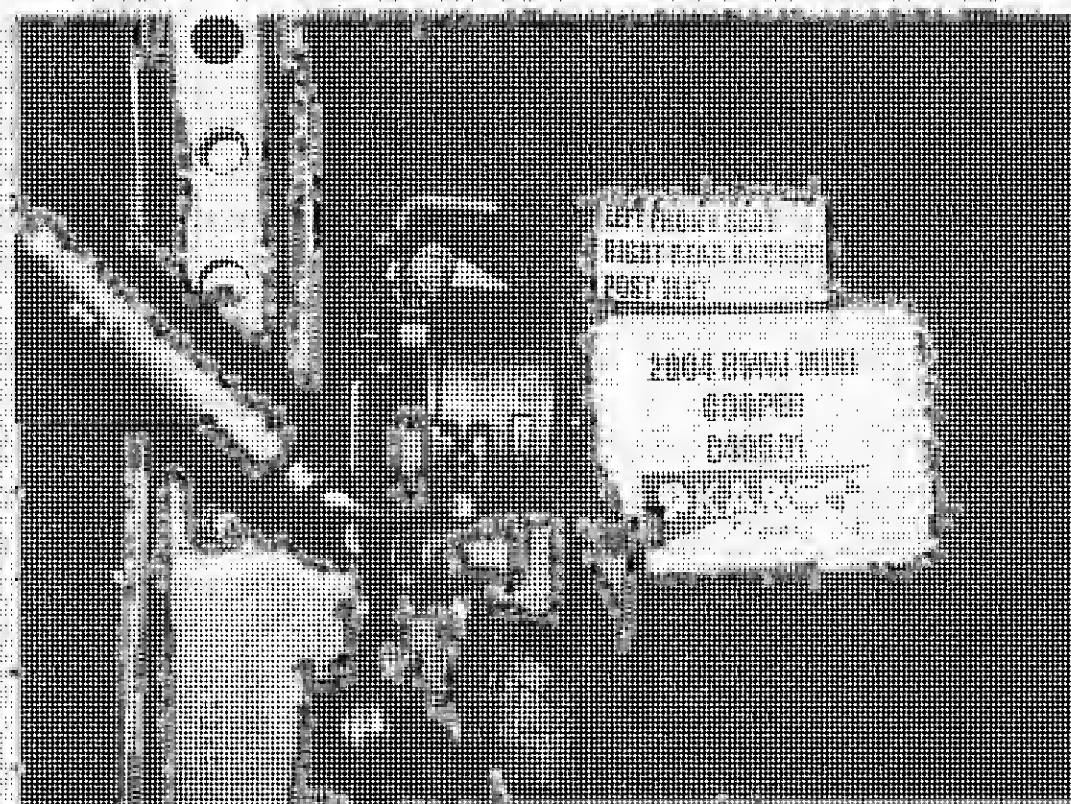


Figure A-59: Floor Pan Anchor, Left Front Seat, Post-Test (with Seat Tracks in place)

A-61

2004 BMW 320i

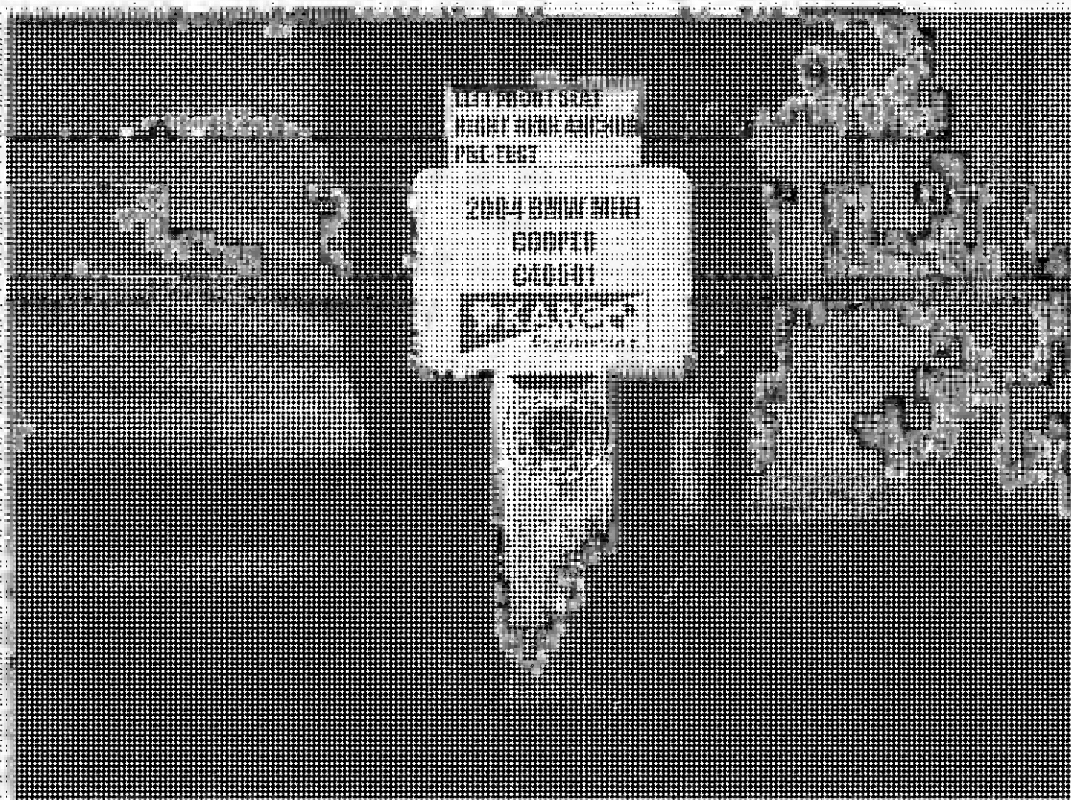


Figure A-61: Seat Anchor, Left Front Seat, Pre-Test

A-62

2004 BMW 320i

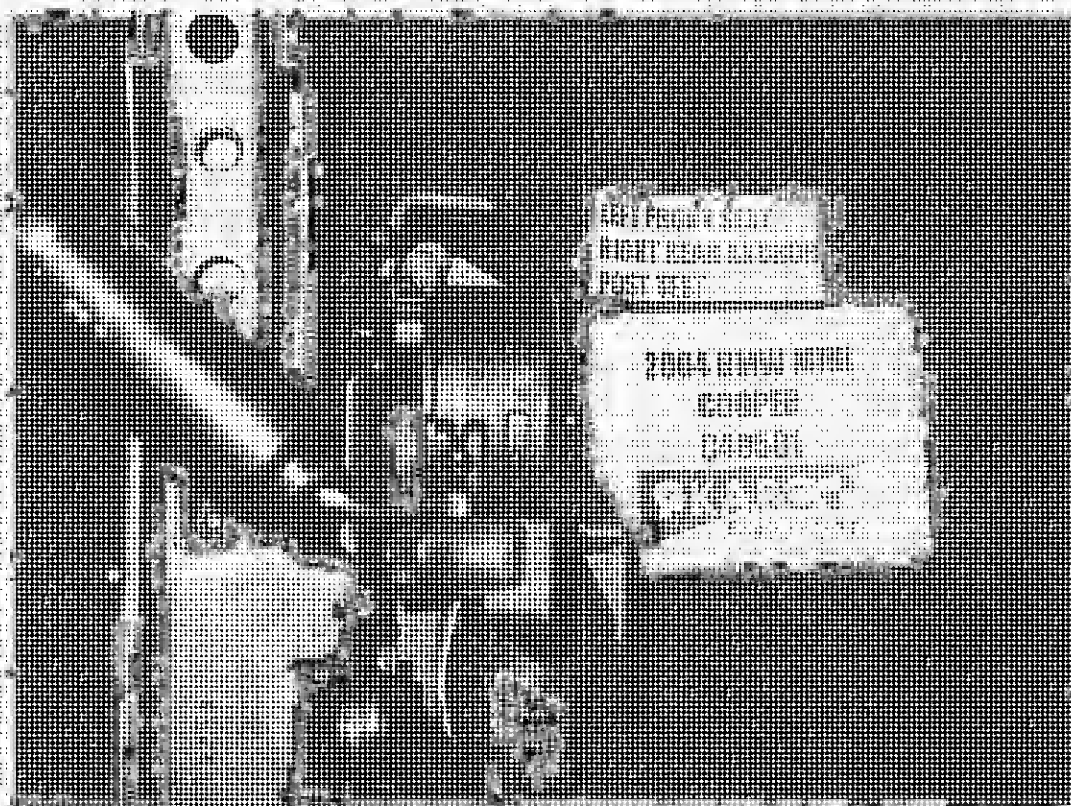


Figure A-62: Seat Anchor, Left Front Seat, Post-Test (with Seat Tracks set in place)

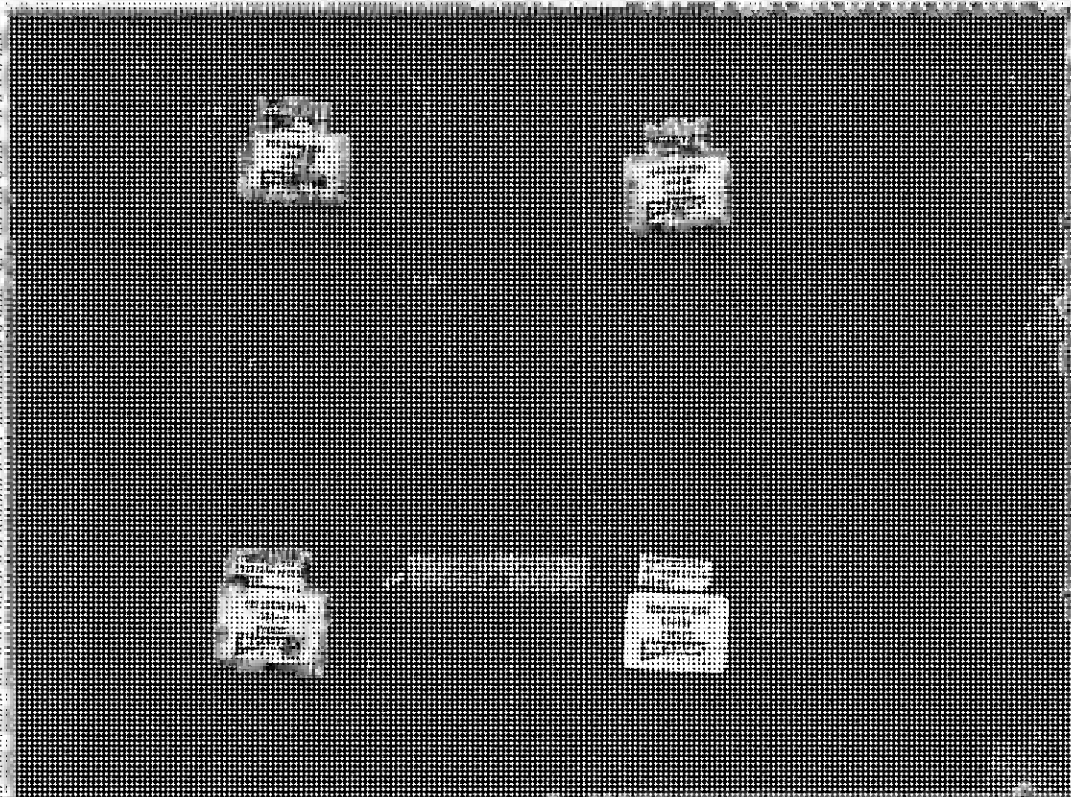


Figure A-63: Floor Pan Anchors, Right Front Seat Cross, Pre-Test

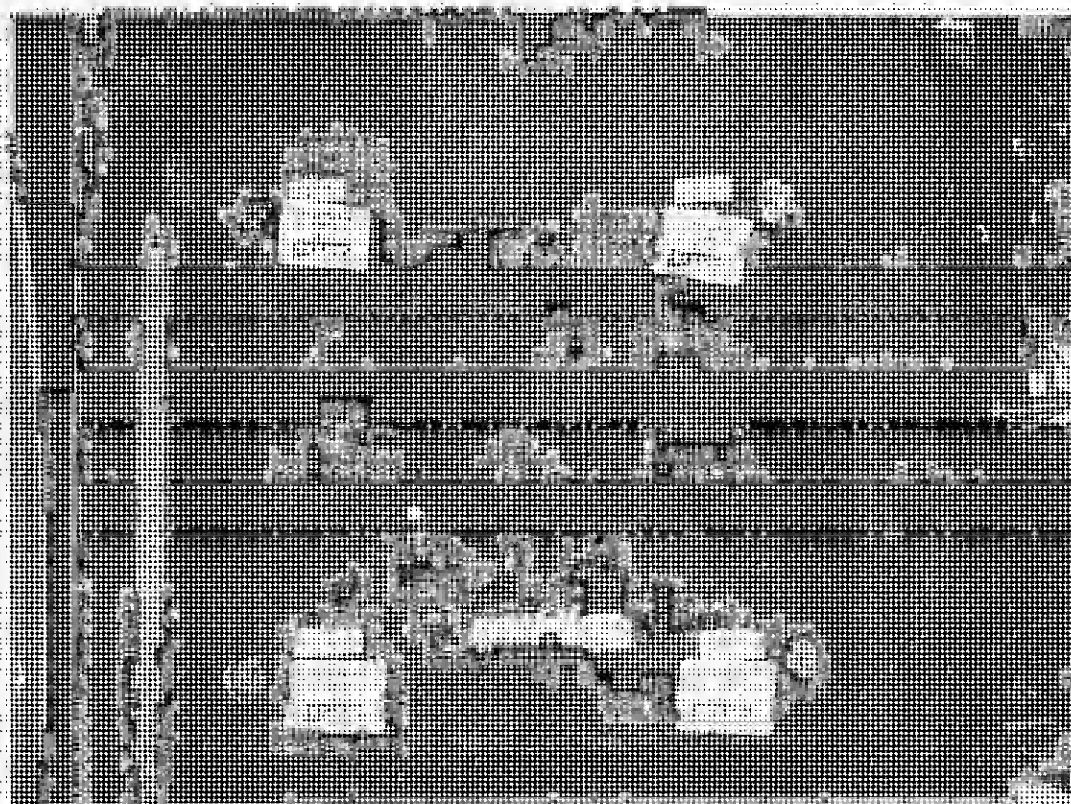


Figure A-64: Floor Pan Anchors, Right Front Seat Cross, Post-Test

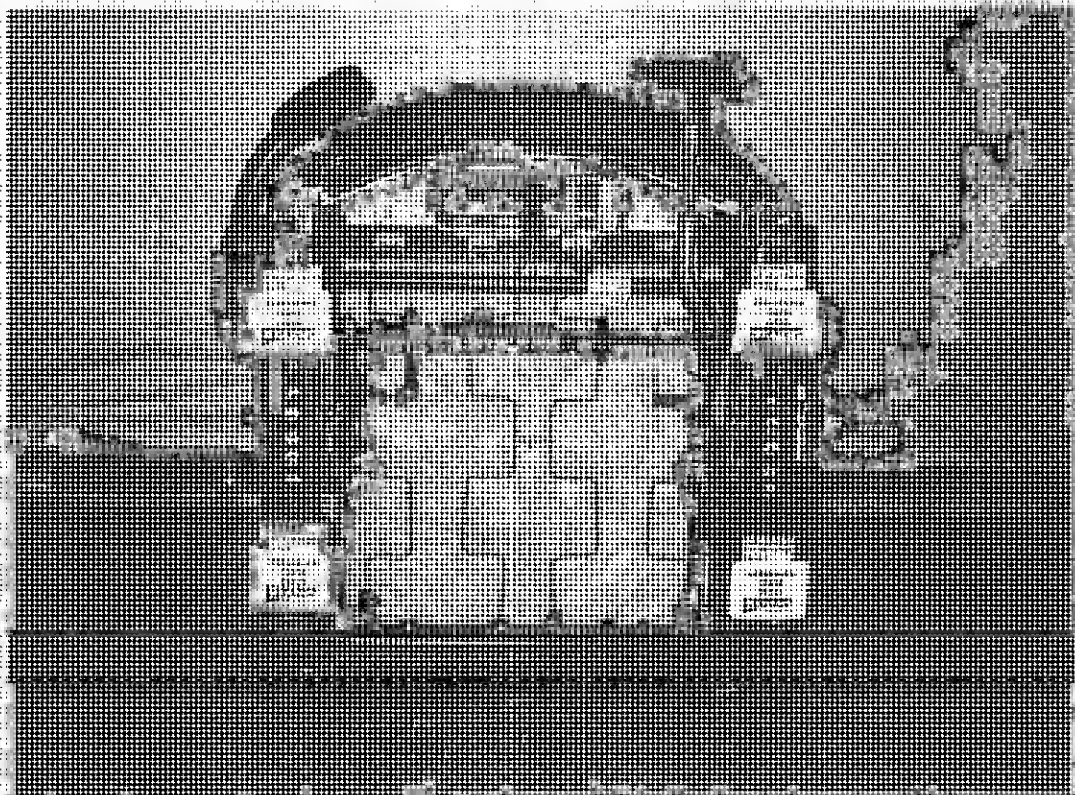


Figure A.55: Seat Anchors, Right Front Seat Overall, Post Test

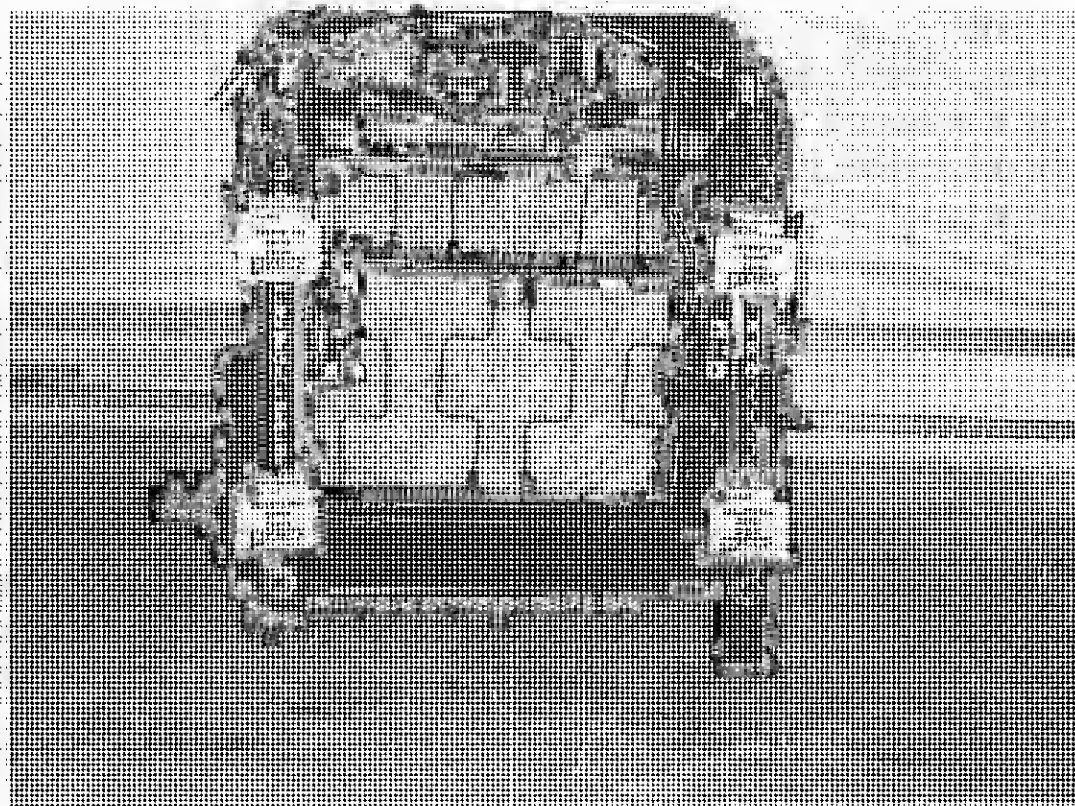


Figure A.56: Seat Anchors, Right Front Seat Overall, Post Test

A-67

2004 BMW MINI
COOPER
C40501

A-68

2004 BMW MINI
COOPER
C40501

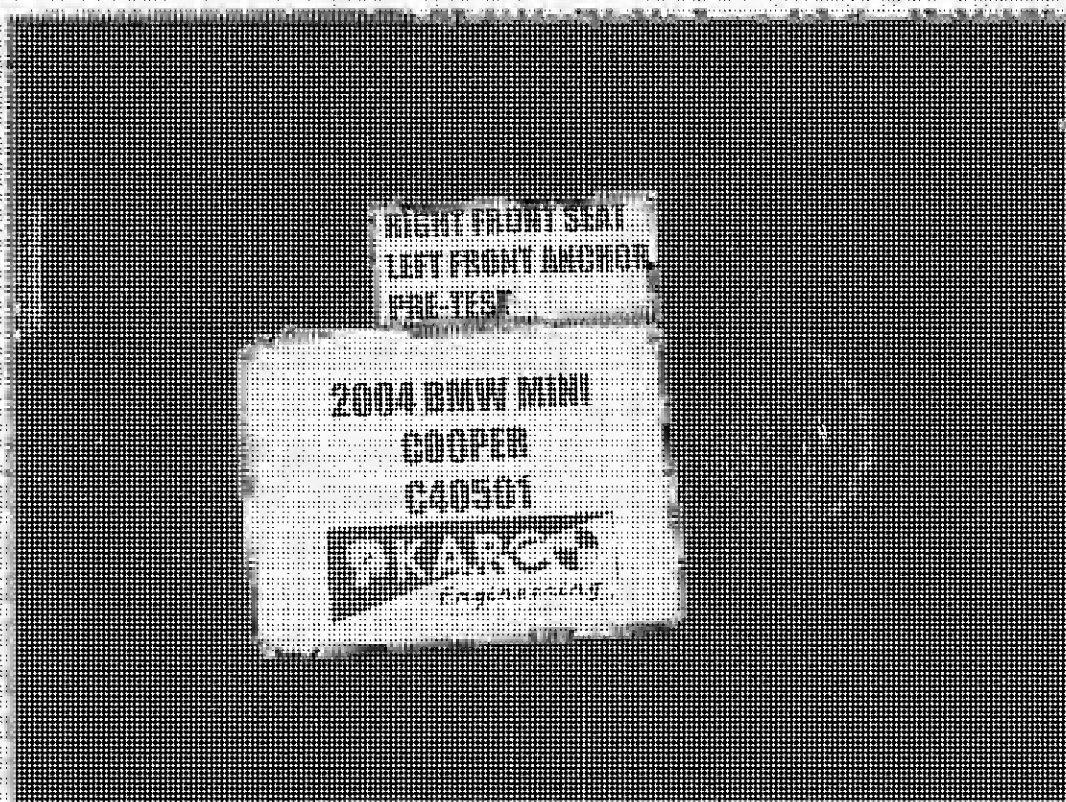


Figure A-67: Floor Pan Anchor, Right Front Seat, Pre-Test



Figure A-68: Floor Pan Anchor, Right Front Seat, Post-Test

A-69

207 K&R 04-001

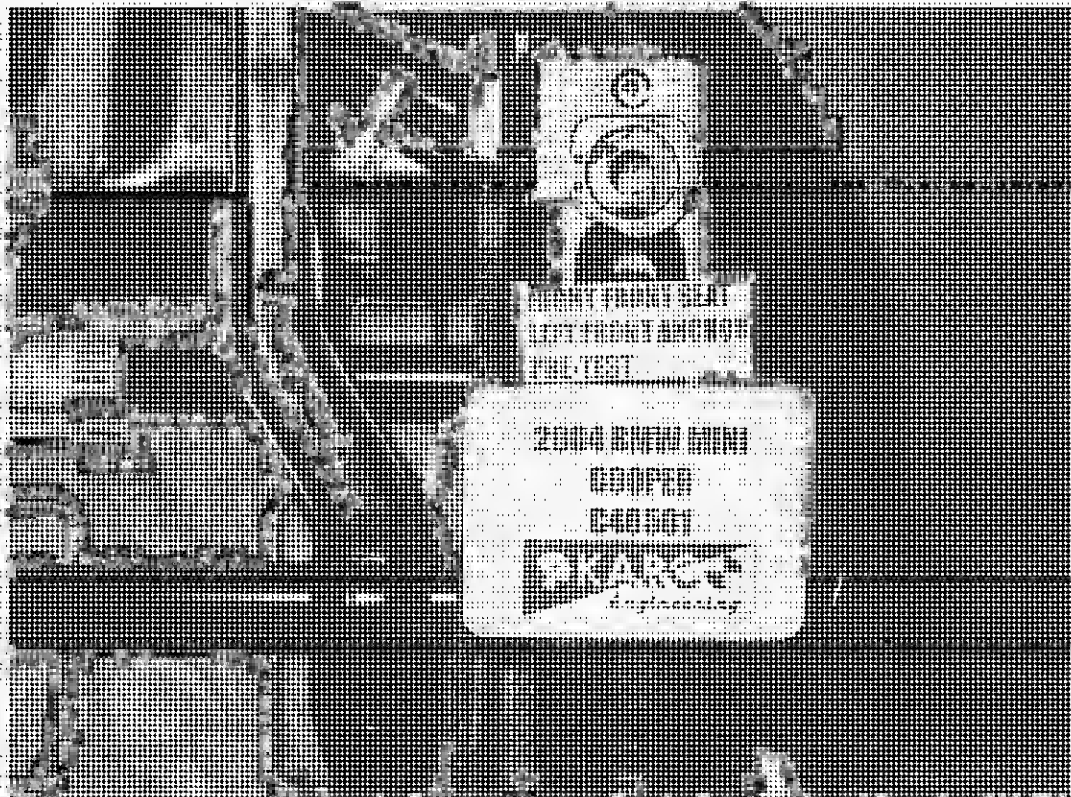


Figure A-69, Seat Anchor, Right Front Seat, Pre-Test

A-70

207 K&R 04-001

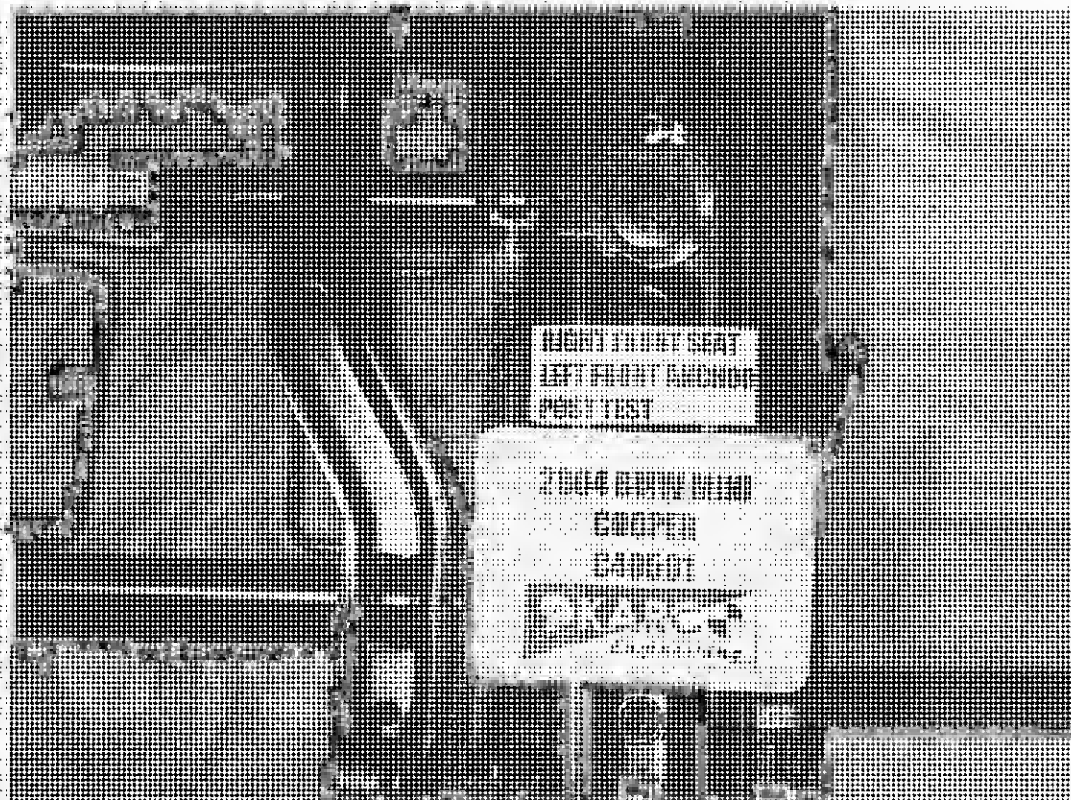


Figure A-70, Seat Anchor, Right Front Seat, Post-Test

A-11

2004 BMW MINI

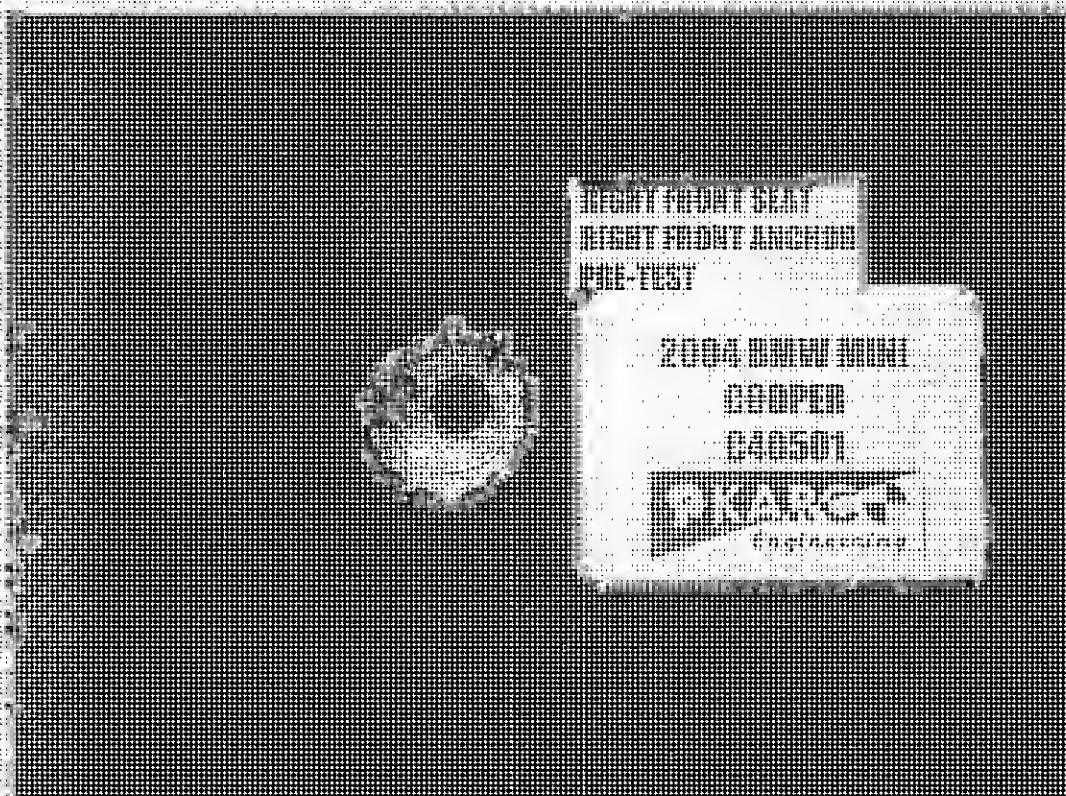


Figure A-11: Floor Pan Anchor, Right Front Seat, Pre-Test

A-12

2004 BMW MINI

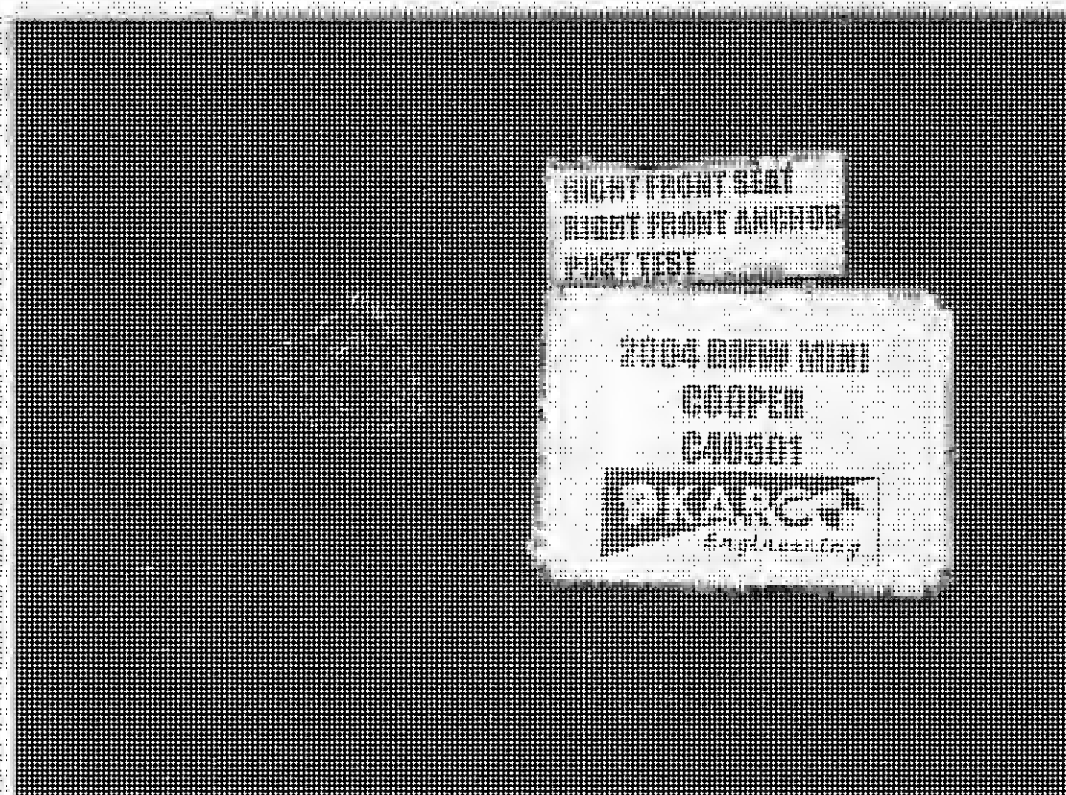


Figure A-12: Floor Pan Anchor, Right Front Seat, Post-Test



Figure A-73: Seat Anchor, Right Front Seat, Pre-Test

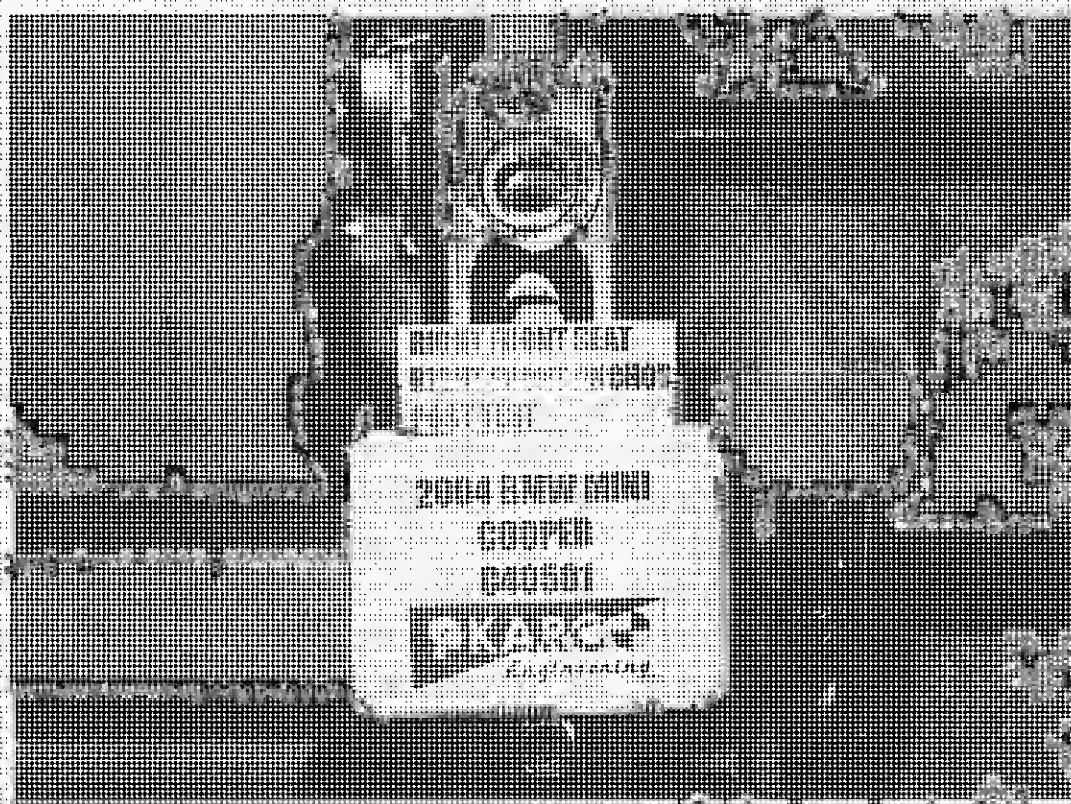


Figure A-74: Seat Anchor, Right Front Seat, Post-Test

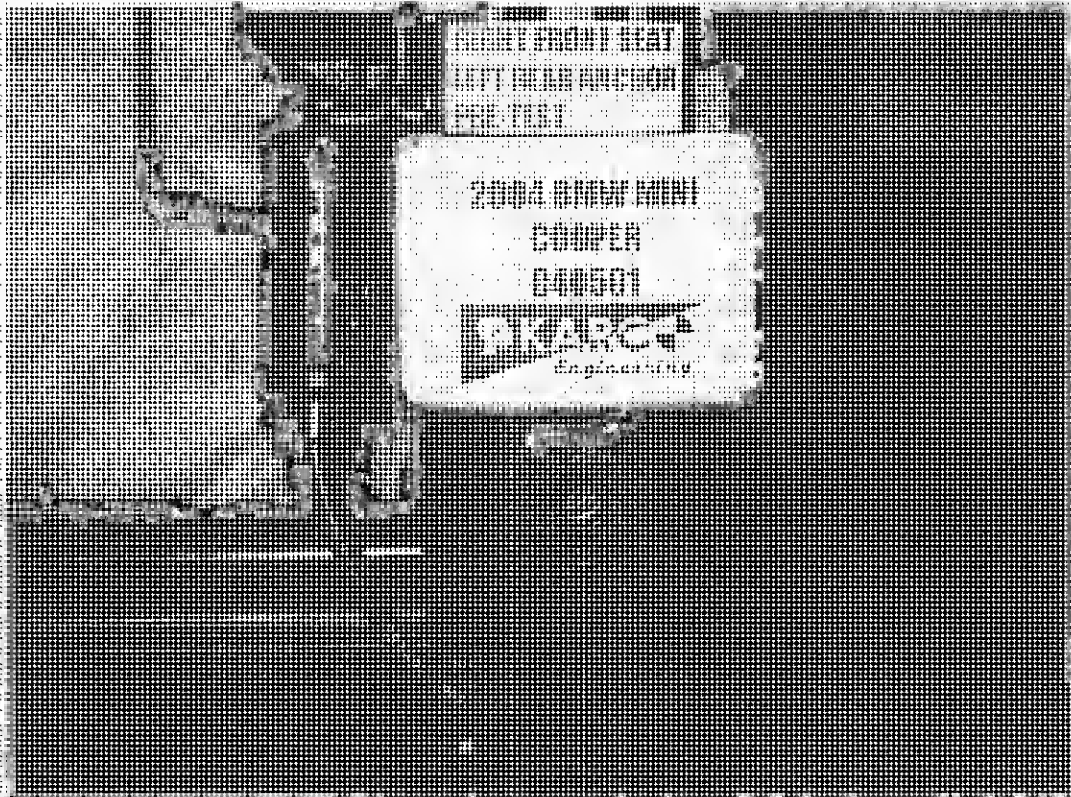


Figure A-77. Seat Anchor, Right Front Seat, Pre-Test

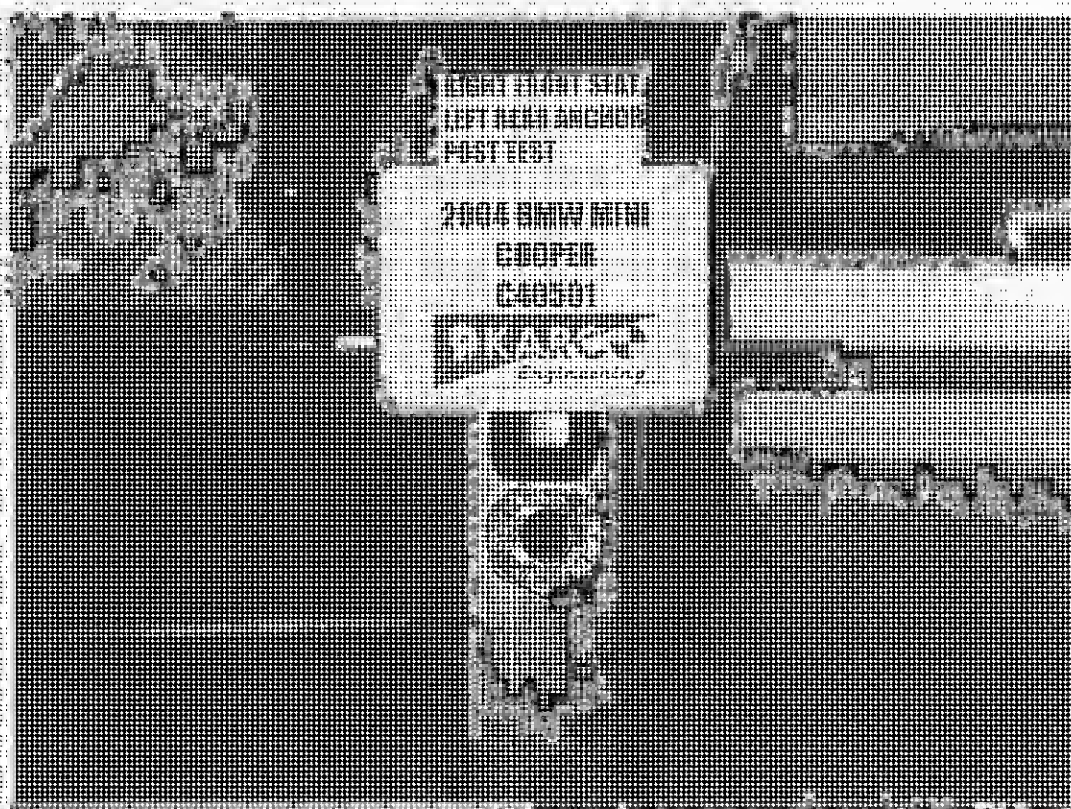


Figure A-78. Seat Anchor, Right Front Seat, Post-Test

A-79

2004-01-04-000

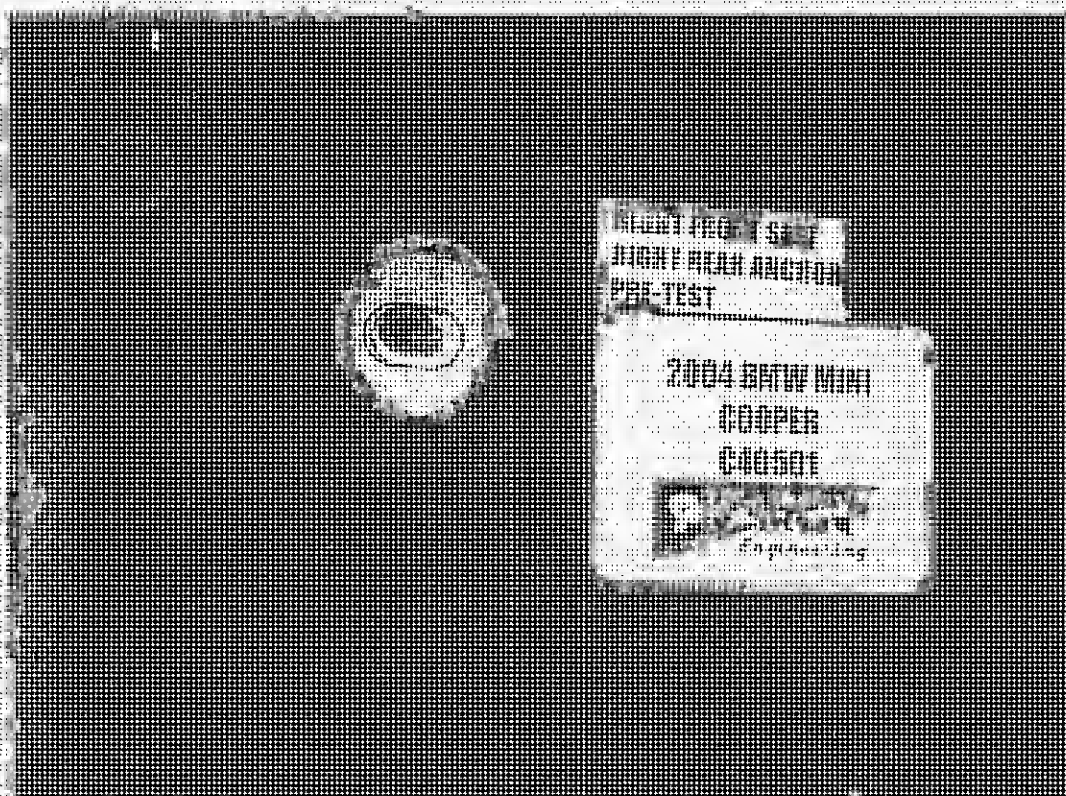


Figure A-79: Floor Pan Anchor, Right Front Seat, Pre-Test

A-80

2004-01-04-001

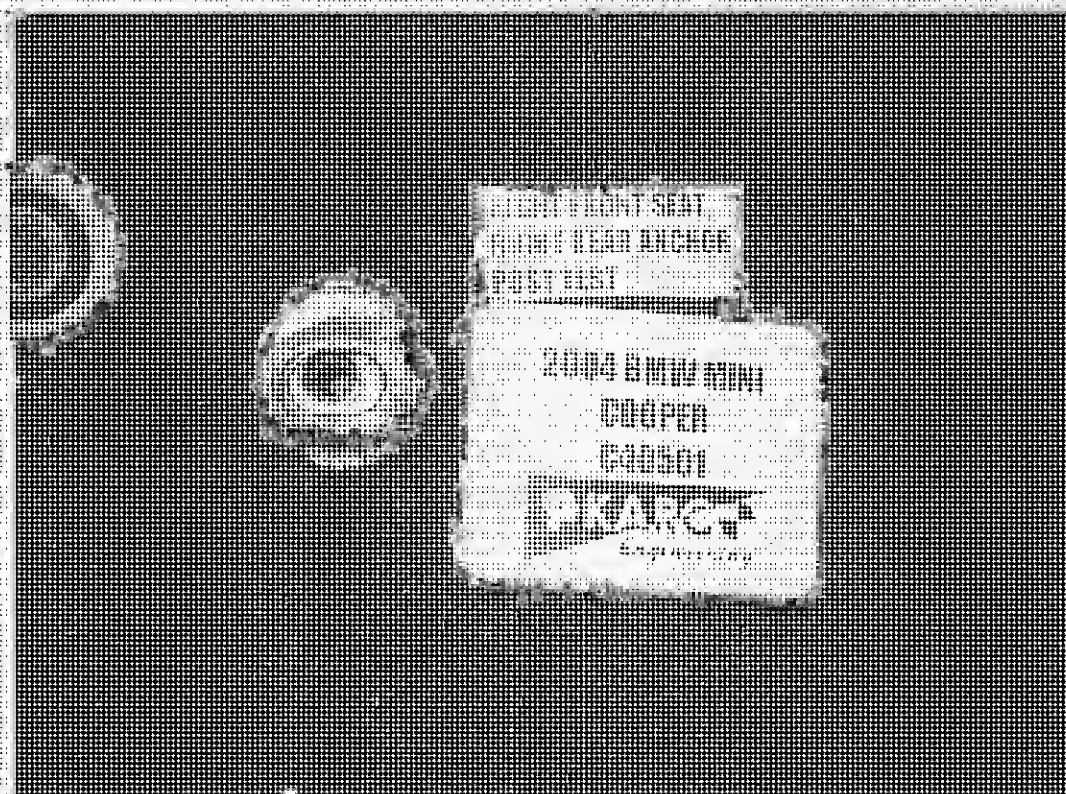


Figure A-80: Floor Pan Anchor, Right Front Seat, Post-Test

A-01

2004 KIA SH-DOO

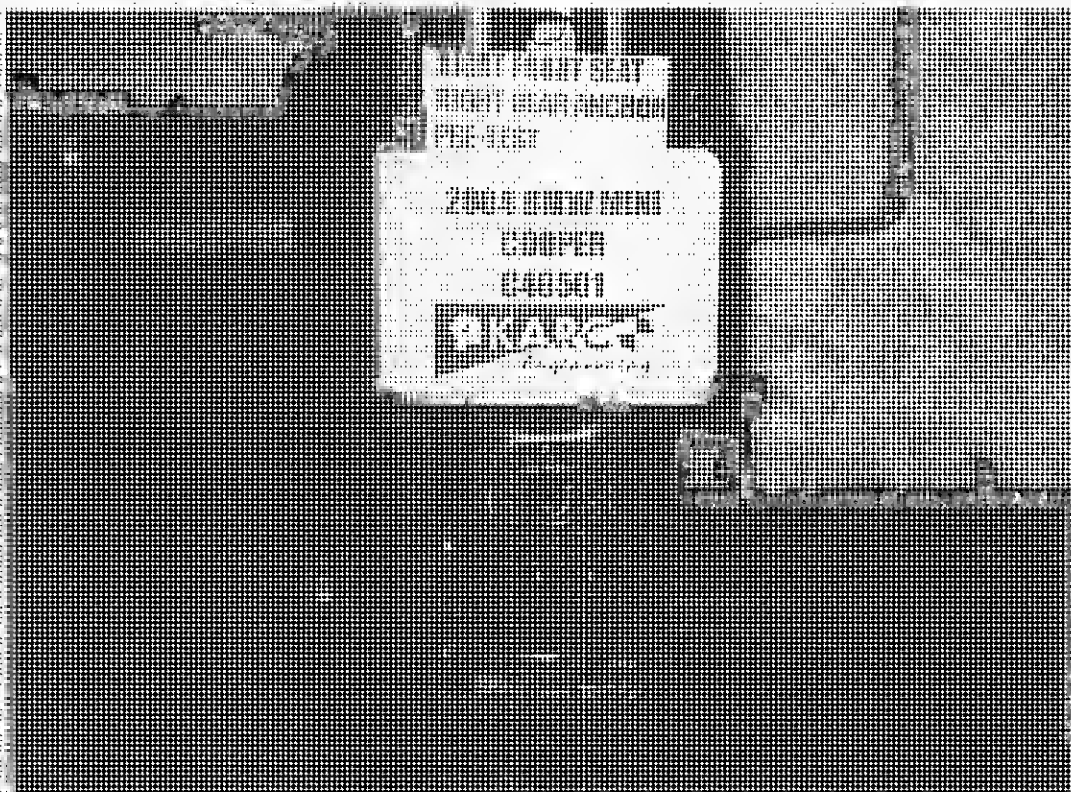


Figure A-01: Seat Anchor, Right Front Seat, Pre-Test

A-02

2004 KIA SH-DOO

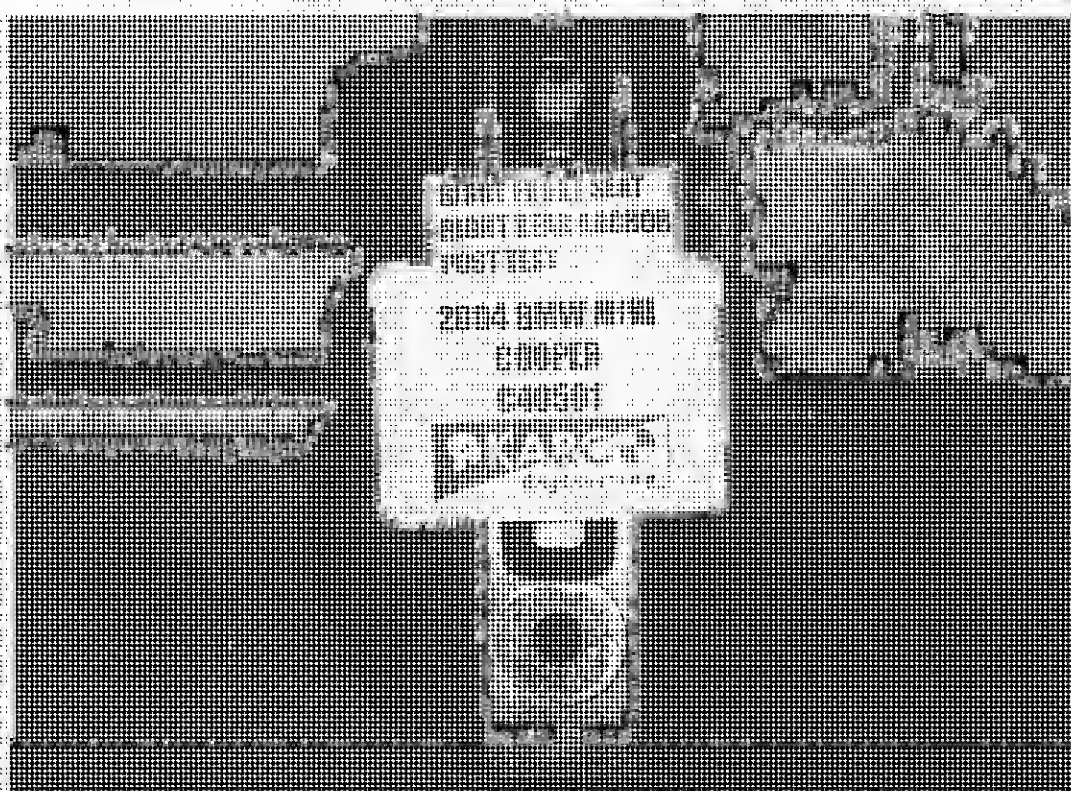


Figure A-02: Seat Anchor, Right Front Seat, Post-Test

4-85

201 KAS 05-01

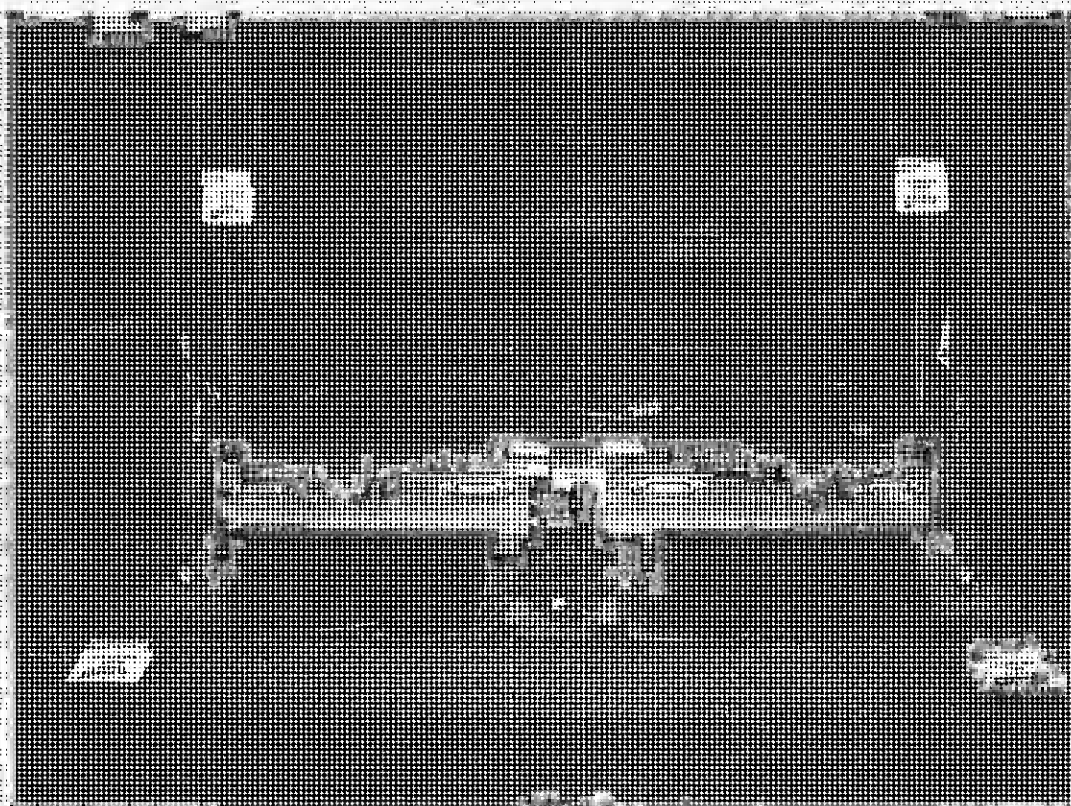


Figure A-33. Floor Pan Anchors, Rear Seat, Seat Cushion Overlay, 2nd Pass

4-86

201 KAS 05-01

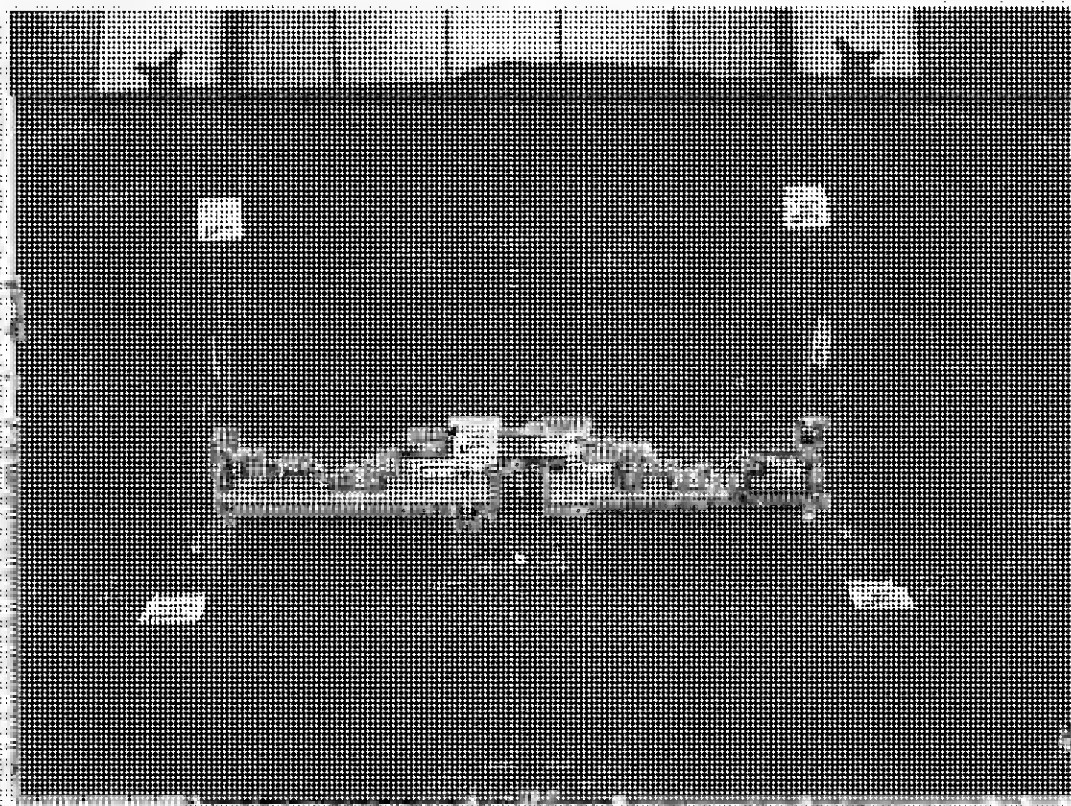


Figure A-34. Floor Pan Anchors, Rear Seat, Seat Cushion Overlay, 2nd Pass

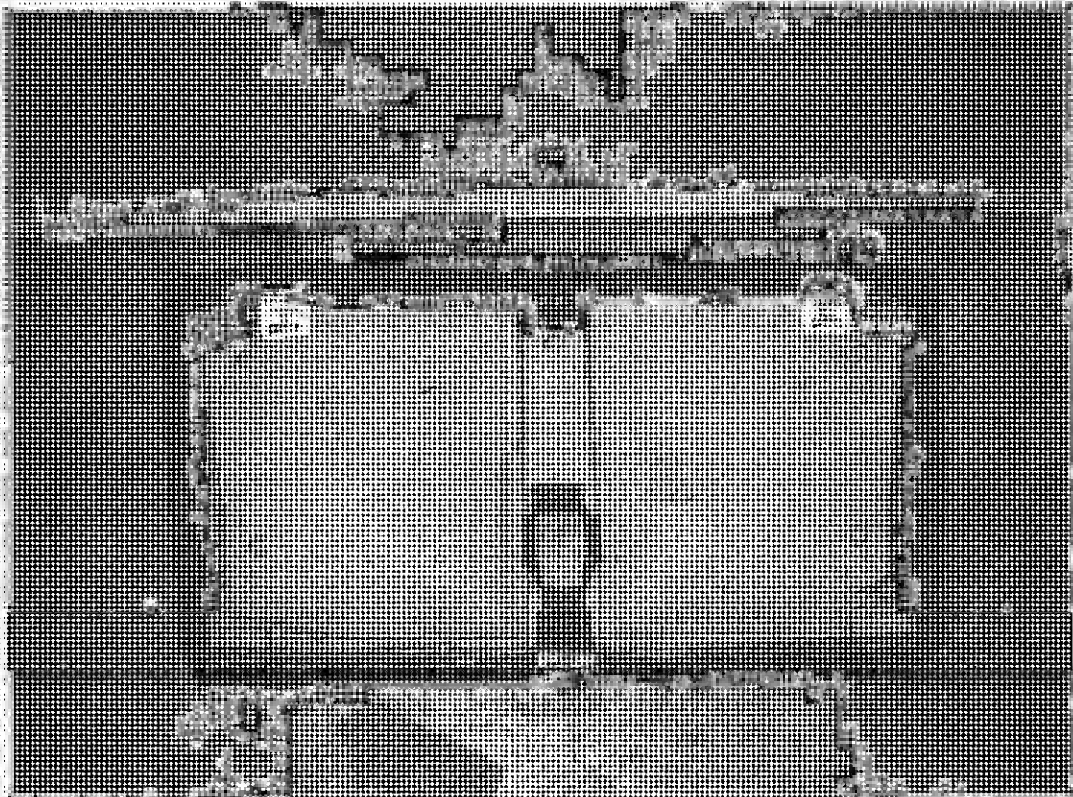


Figure A-46: Seat Anchors, Rear Seat, Seat Cushion Overlap, Pre-Test

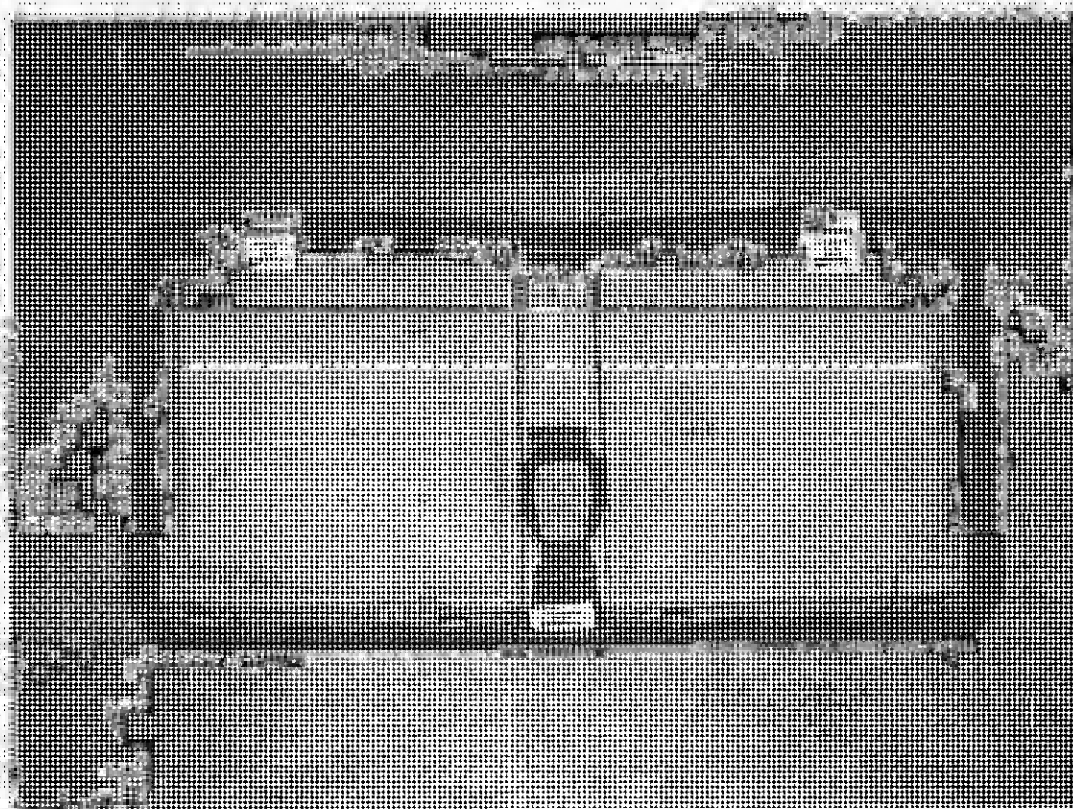


Figure A-46: Seat Anchors, Rear Seat, Seat Cushion Overlap, Post-Test

68A

100-45495-152

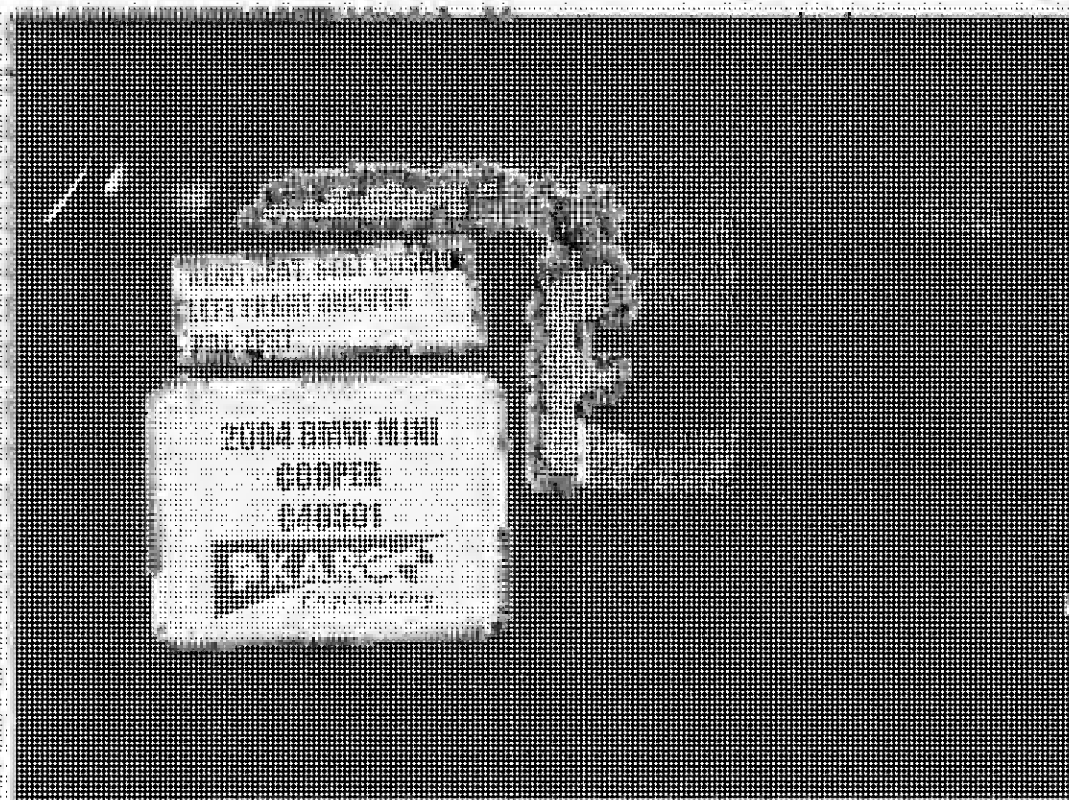


Figure A-87. Floor Pan Anchor, Rear Seat, Seat Cushion, Pre-Test

68B

100-45495-152

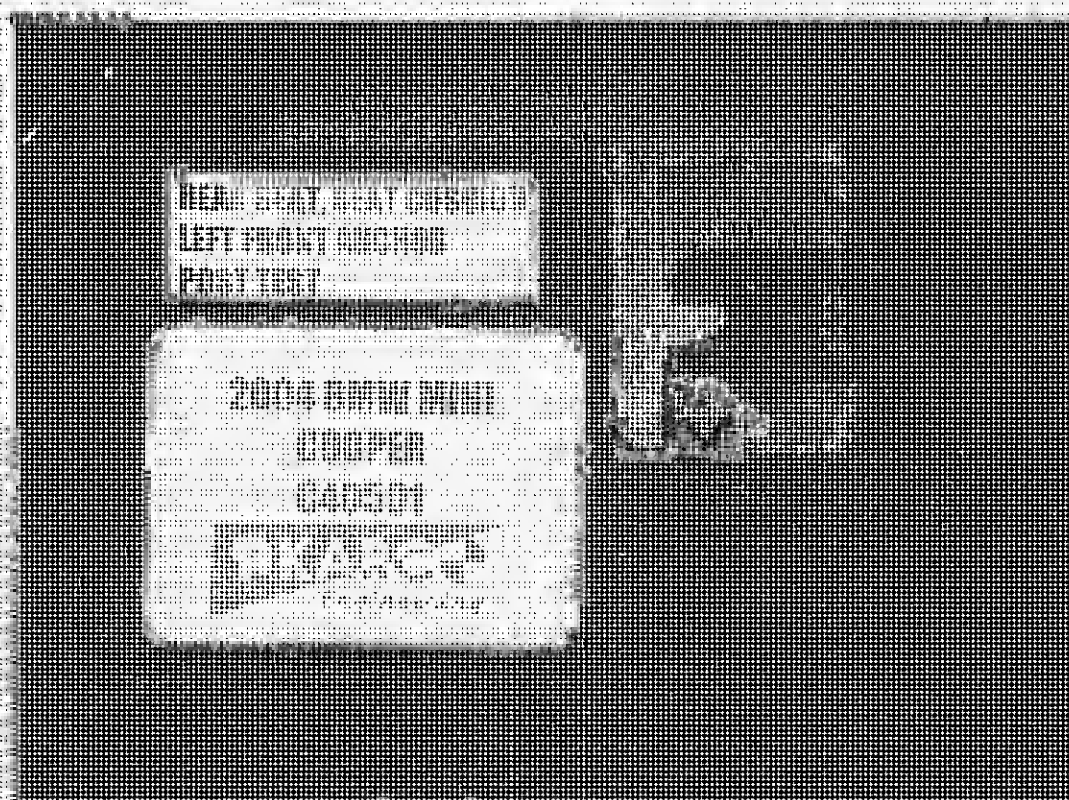


Figure A-88. Floor Pan Anchor, Rear Seat, Seat Cushion, Post-Test

A-88

207 NOV 24 2001

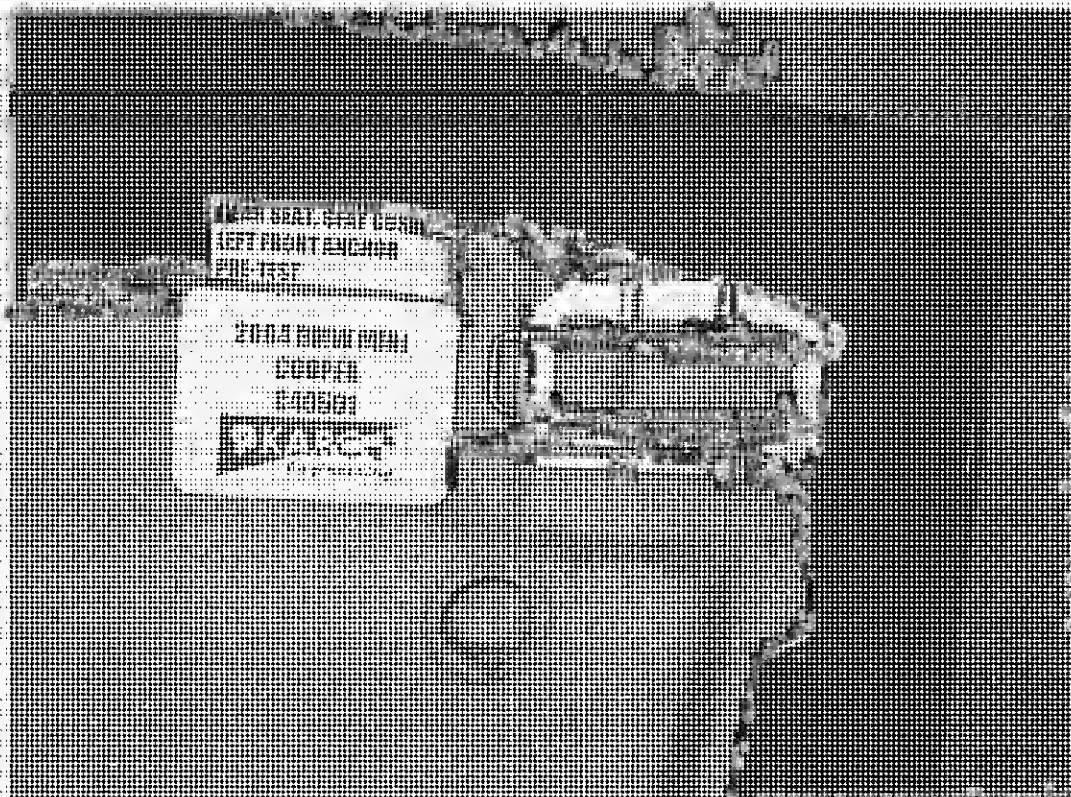


Figure A-88: Seat Anchor, Rear Seat, Seat Cushion, Pre-Test

A-89

207 NOV 24 2001

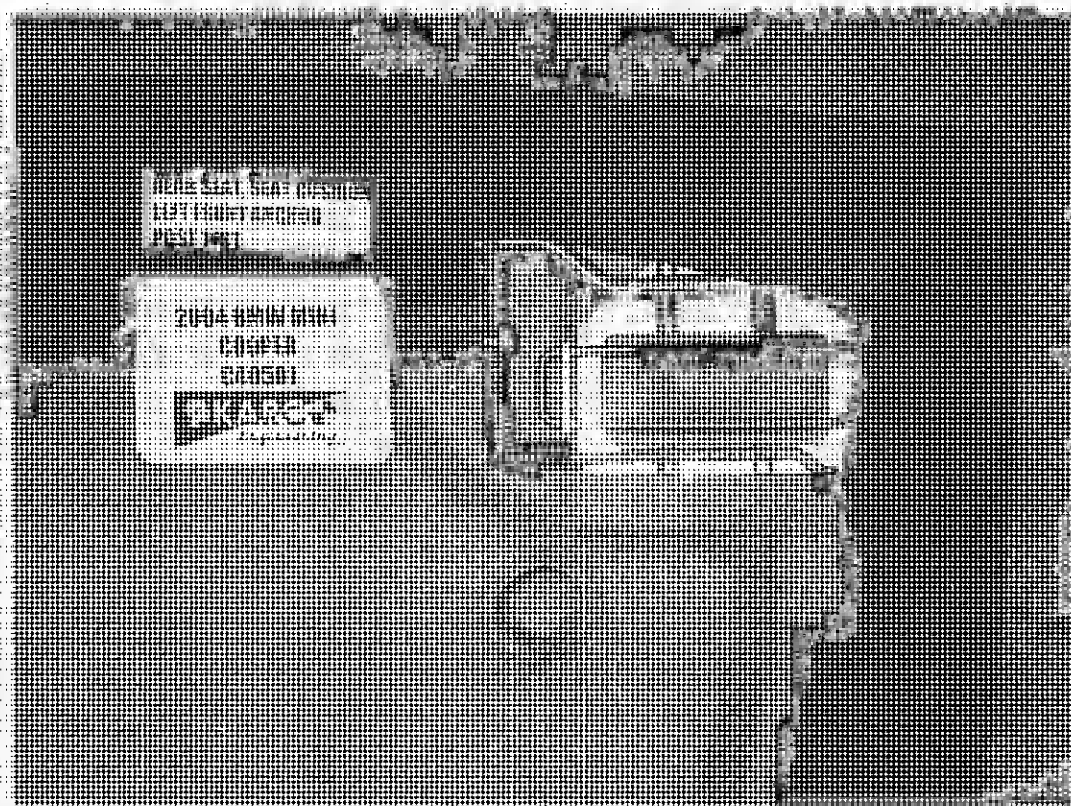


Figure A-89: Seat Anchor, Rear Seat, Seat Cushion, Post-Test

Page 1

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Figure A-91: Floor Pan Anchor, Rear Seat, Seat Cushion, Pre-Test

Page 2

2007-06-04-001

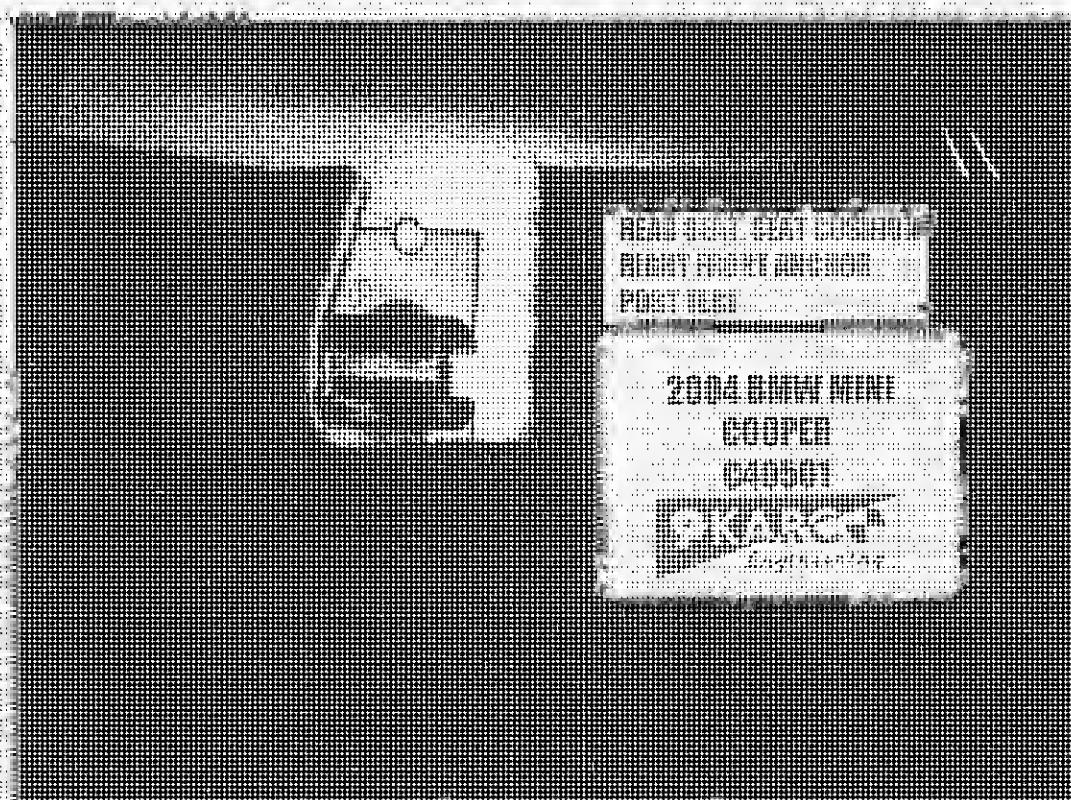


Figure A-92: Floor Pan Anchor, Rear Seat, Seat Cushion, Post-Test

A-40

201-KC-00000001

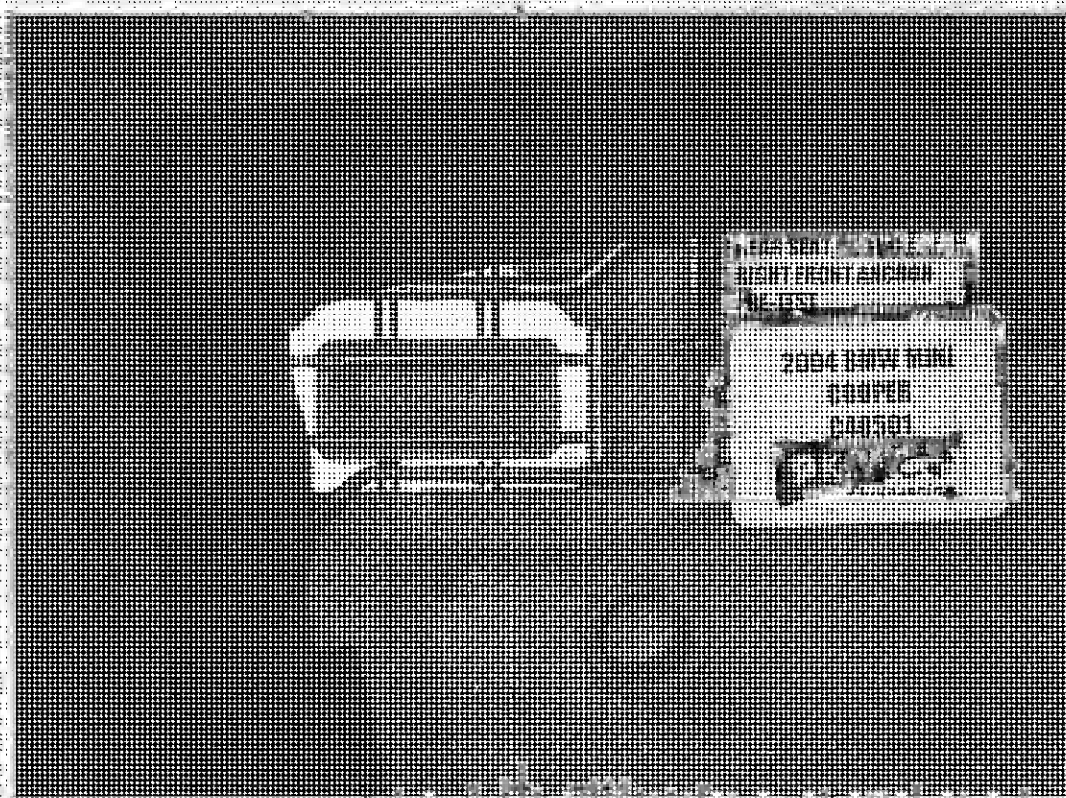


Figure A-53: Seat Anchor, Rear Seat, Seat Cushion, Pre-Test

A-41

201-KC-00000001

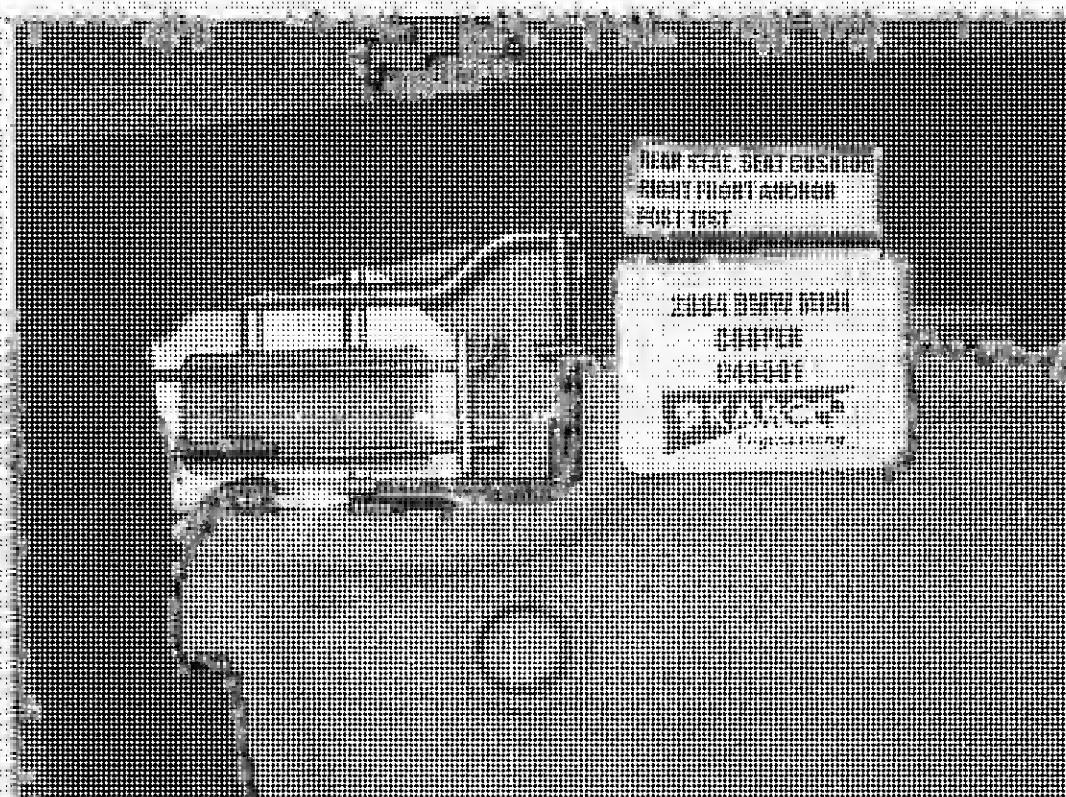


Figure A-54: Seat Anchor, Rear Seat, Seat Cushion, Post-Test

A-92

207-K03-00-001

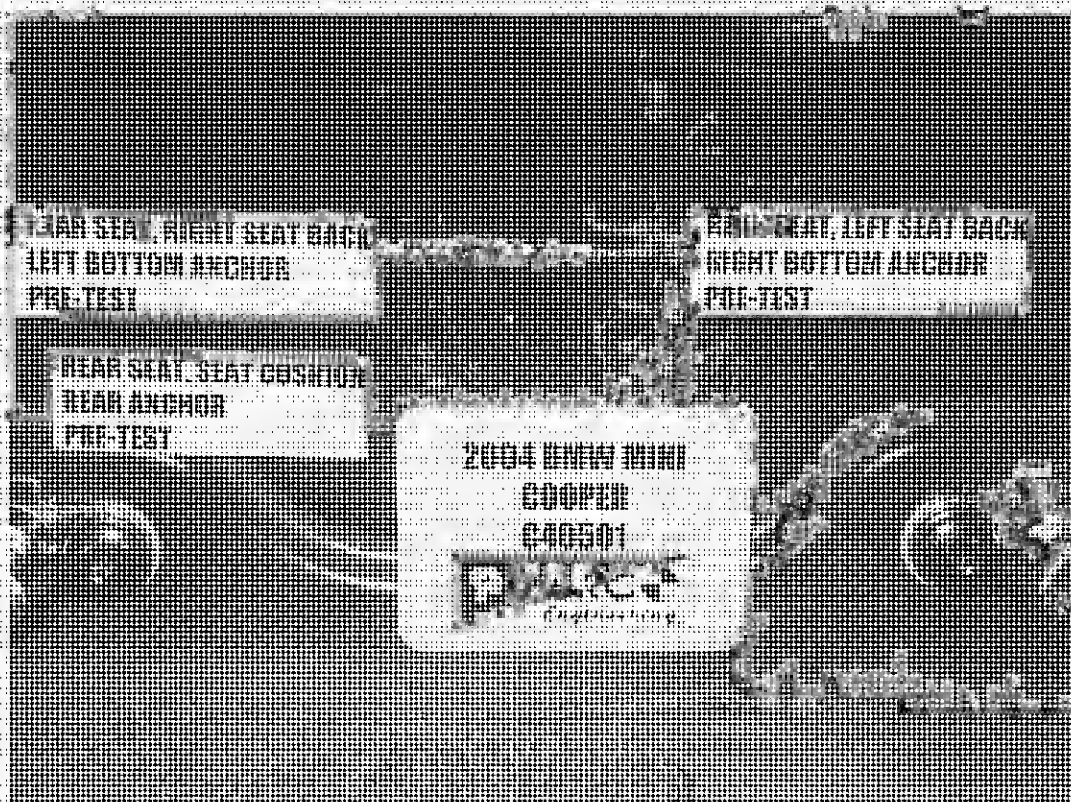


Figure A-90: Floor Plan Anchor, Rear Seat, Seat Cushion, Pre-Test

A-93

207-K03-00-001

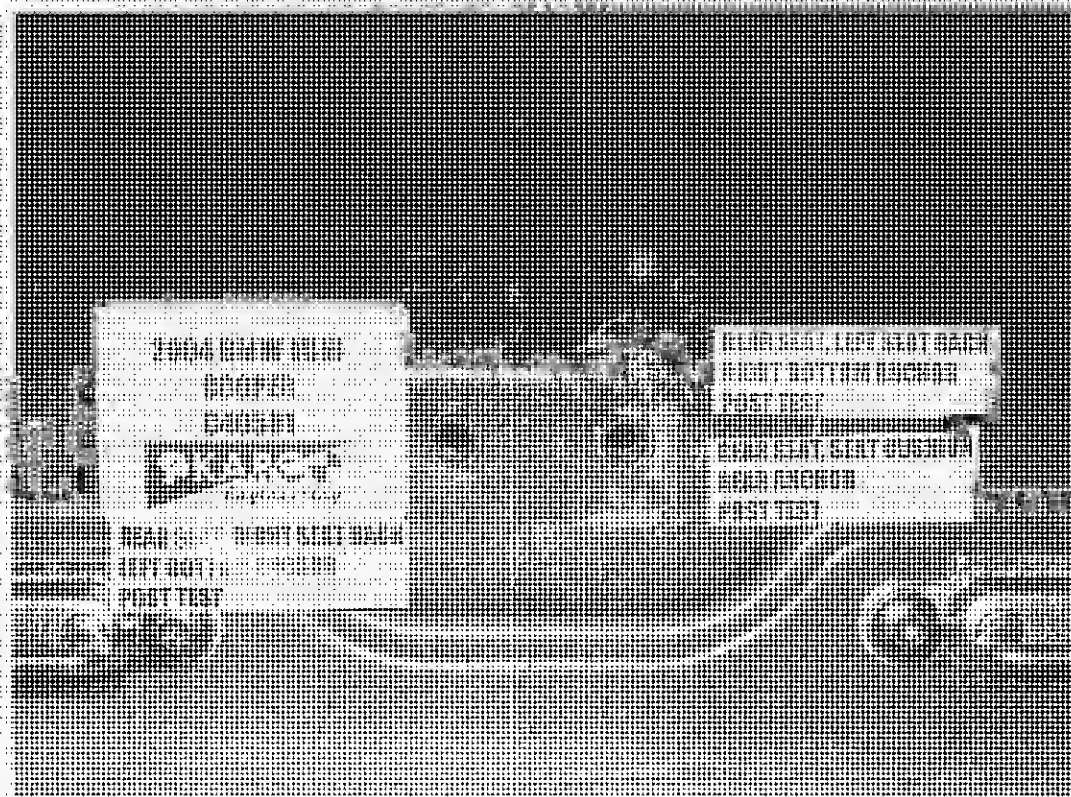


Figure A-90: Floor Plan Anchor, Rear Seat, Seat Cushion, Post-Test

A-97

2004-04-01

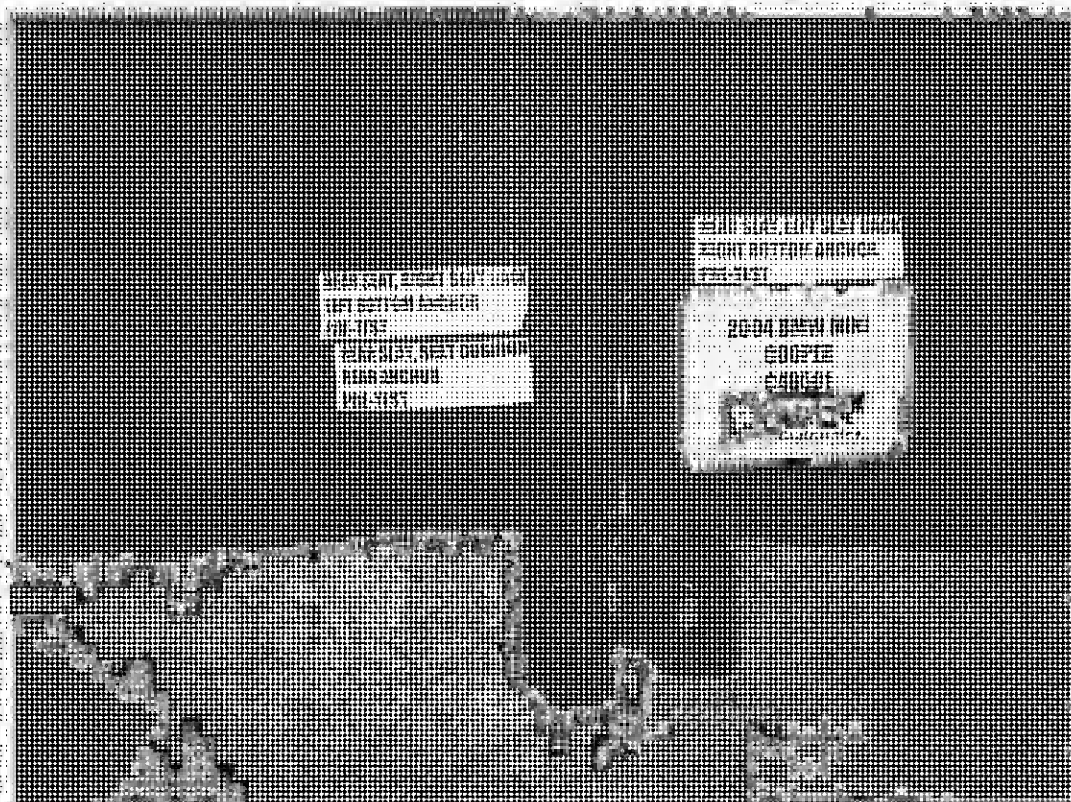


Figure A-97: Seat Anchor, Rear Seat, Seat Cushion, Pre-Test

A-98

2004-04-01

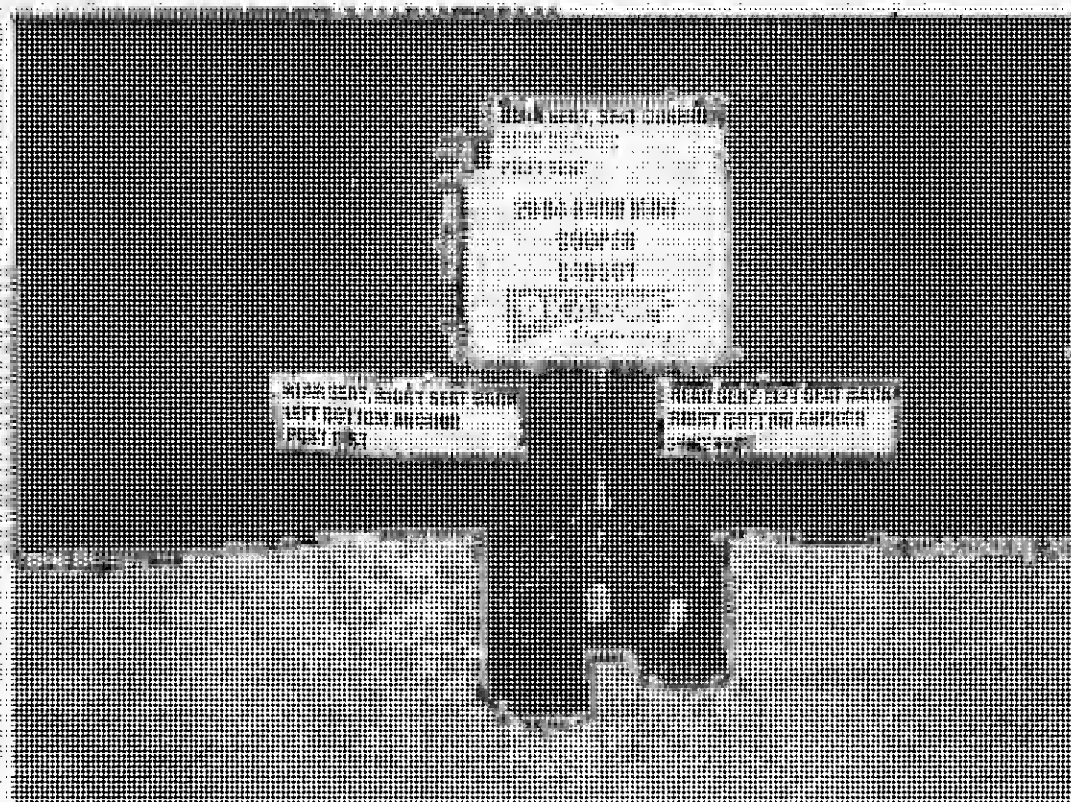


Figure A-98: Seat Anchor, Rear Seat, Seat Cushion, Post-Test

A-99

227 KAR-51-001

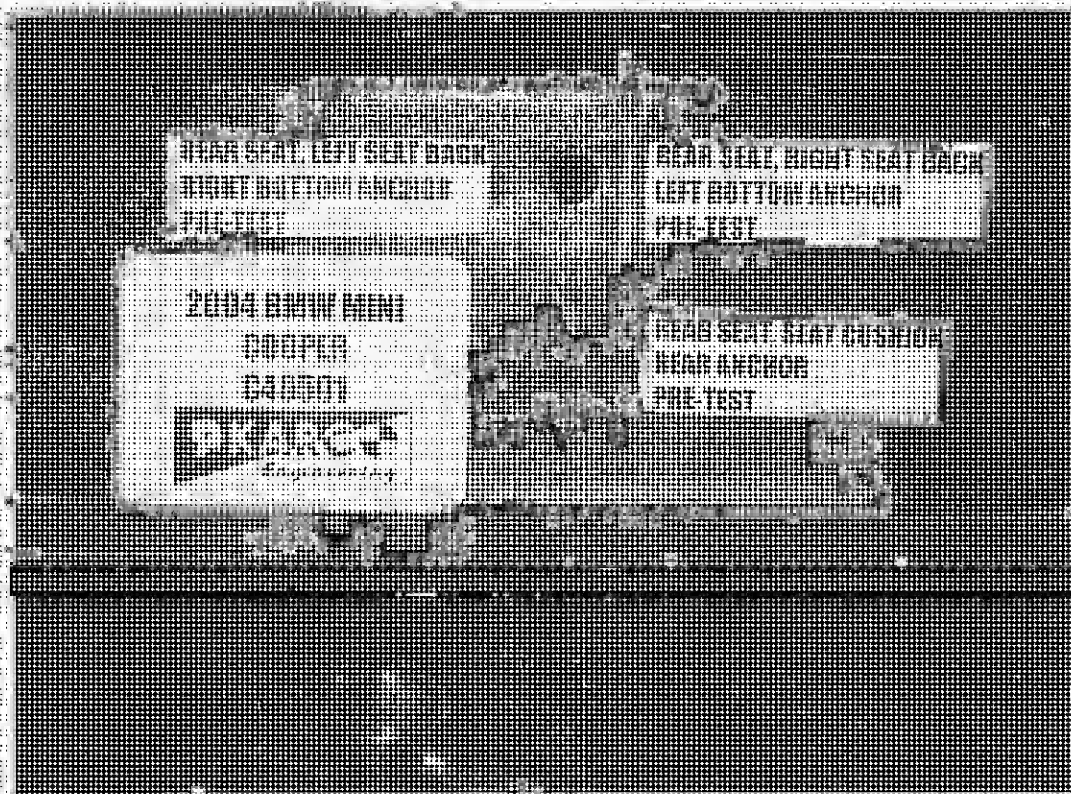


Figure A-99: Floor Pull Anchor, Rear Seat, Seat Cushion, Pre-Test

A-100

227 KAR-51-001

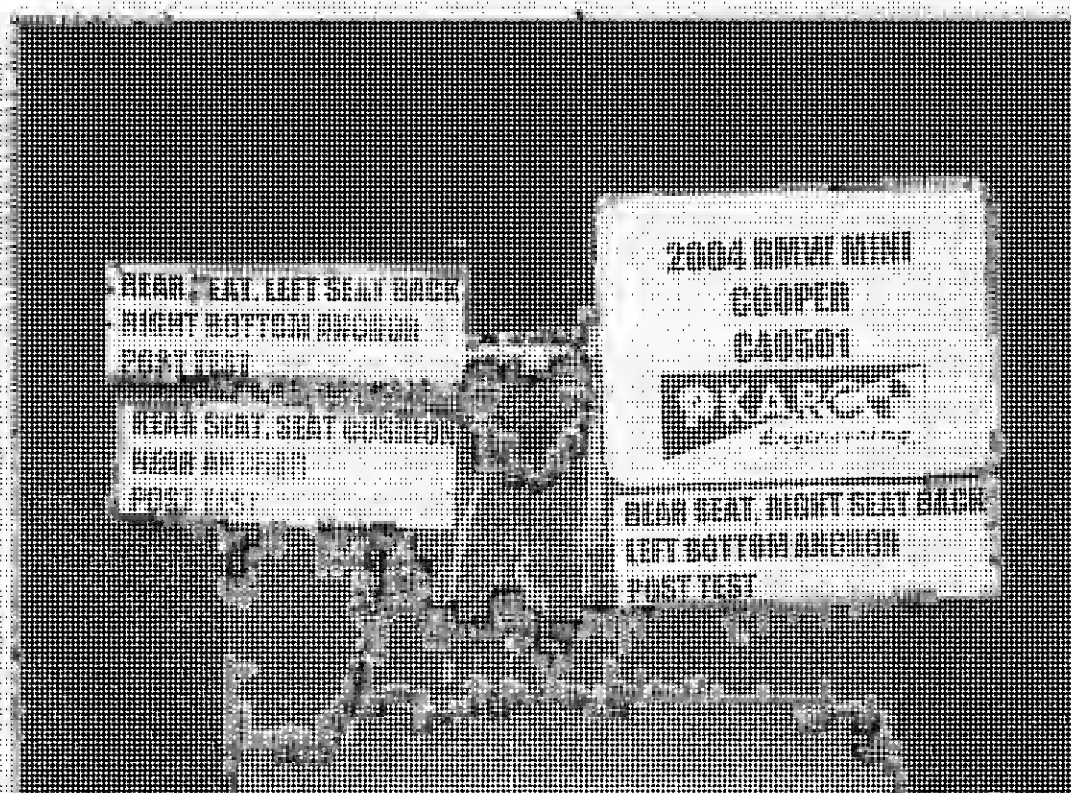


Figure A-100: Floor Pull Anchor, Rear Seat, Seat Cushion, Post-Test

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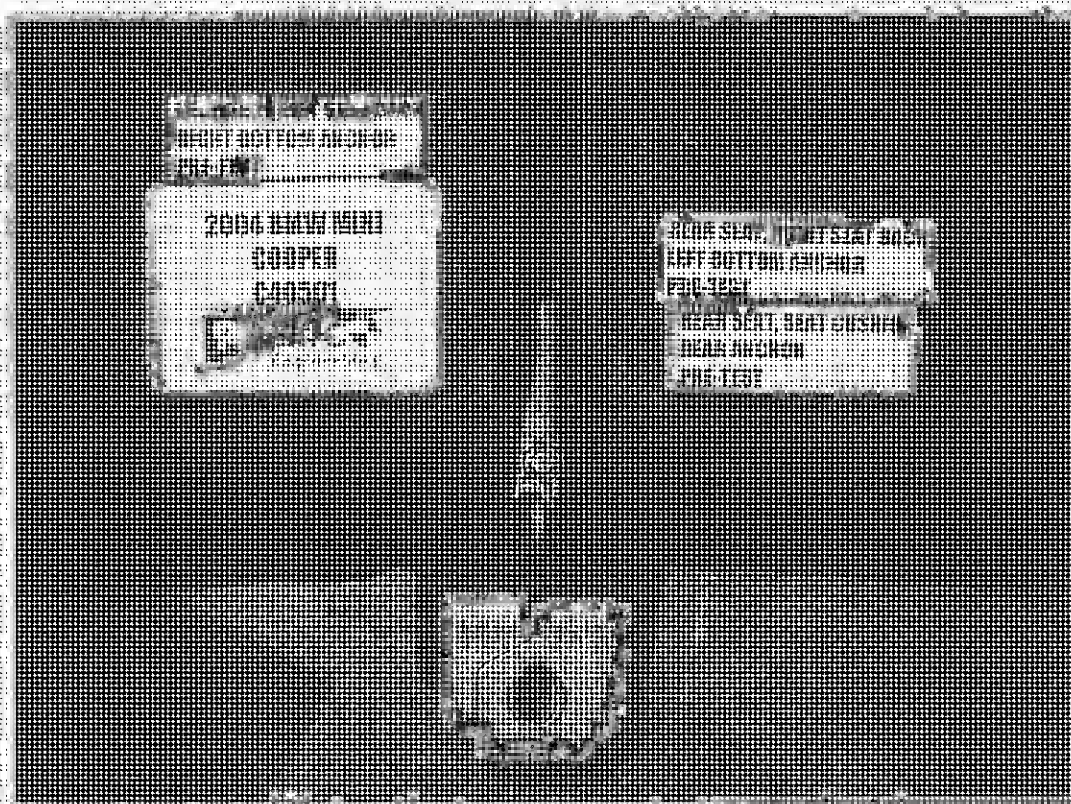


Figure 4-121: Seat Anchor, Rear Seat, Seat Cushion, Pre-Ten

201 NOV 24 03:11

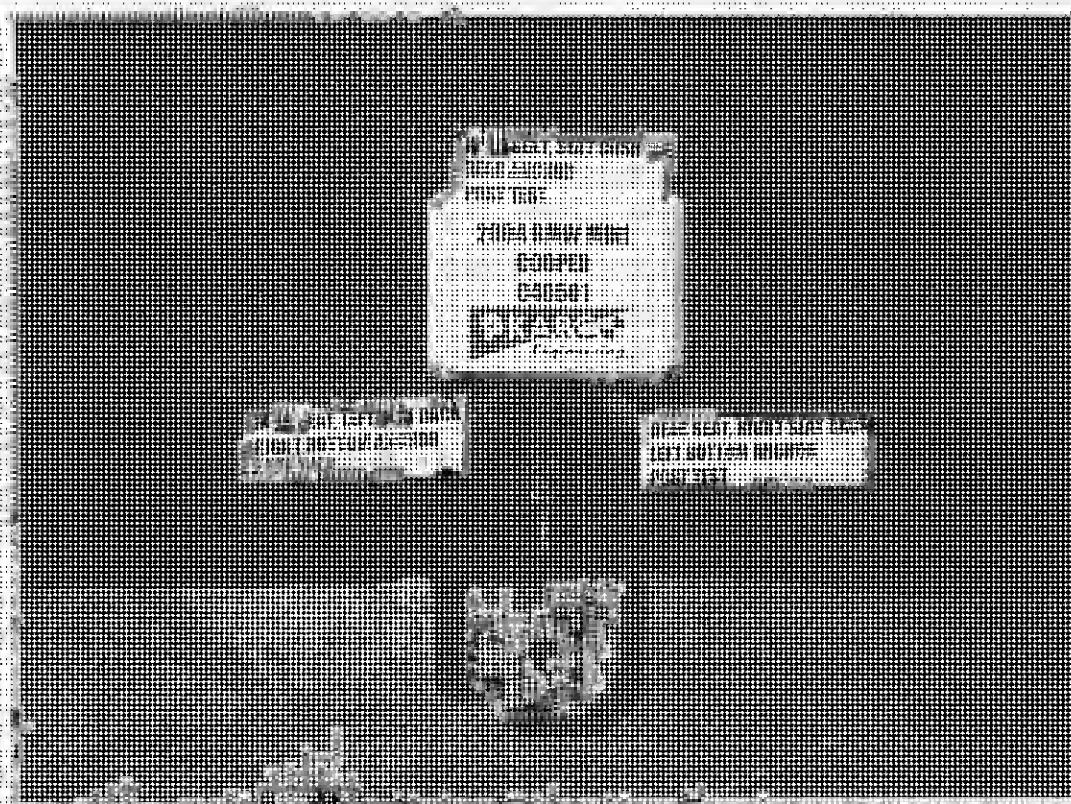


Figure 4-122: Seat Anchor, Rear Seat, Seat Cushion, Post-Ten

A-103

100-10-210-100

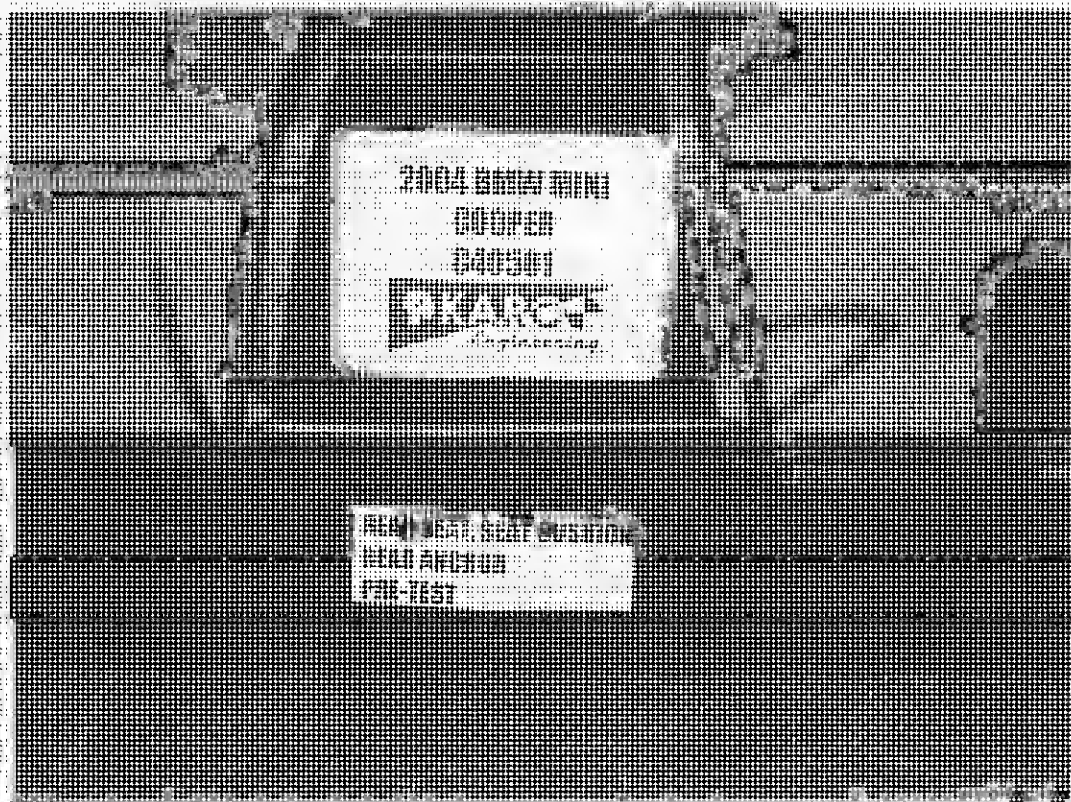


Figure A-103: Seat Anchor, Rear Seat, Seat Cushion, Pro Test

A-104

100-10-210-100

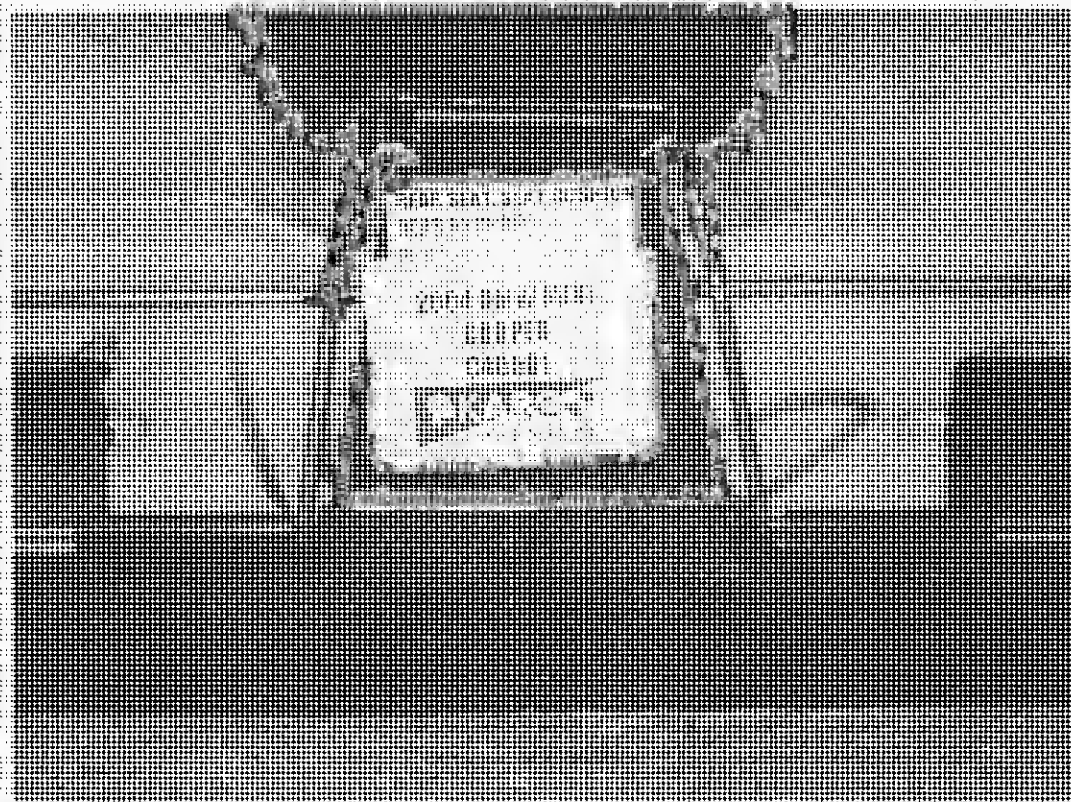


Figure A-104: Seat Anchor, Rear Seat, Seat Cushion, Post Test

A-05

201 NOV 04 071

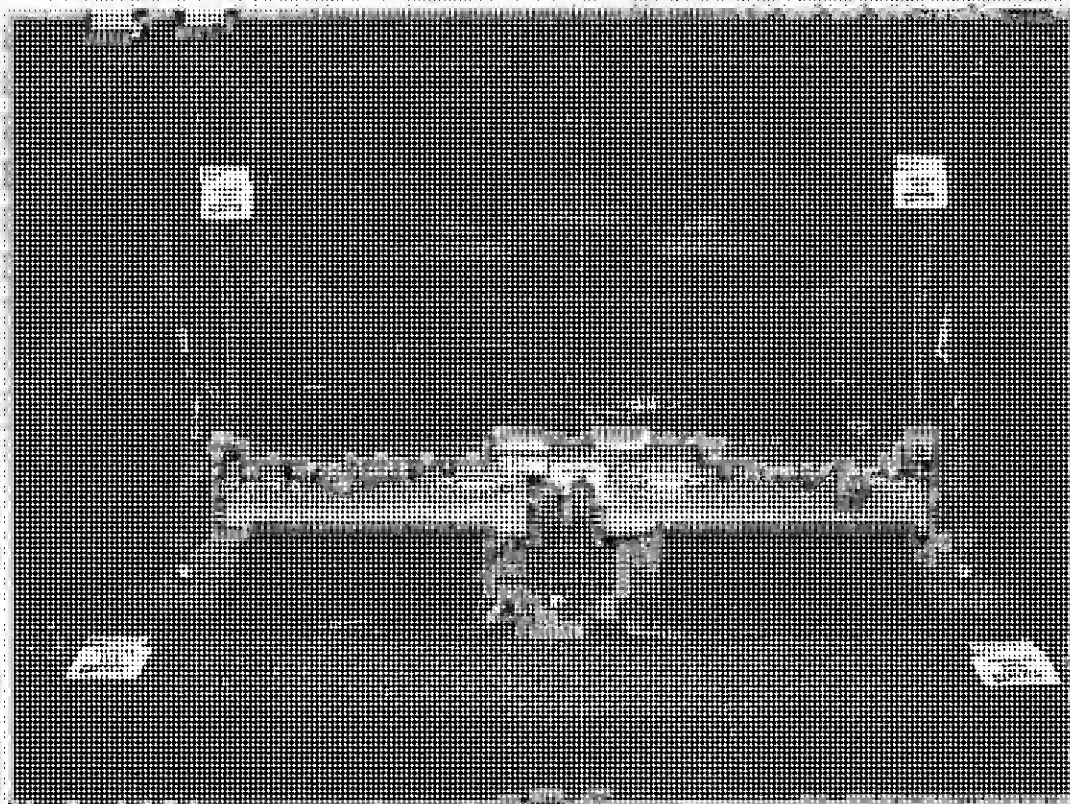


Figure A-05b. Floor Pan Anchors, Rear Seat, Left Seat Back Overall: Pre Test

A-05

201 NOV 04 071

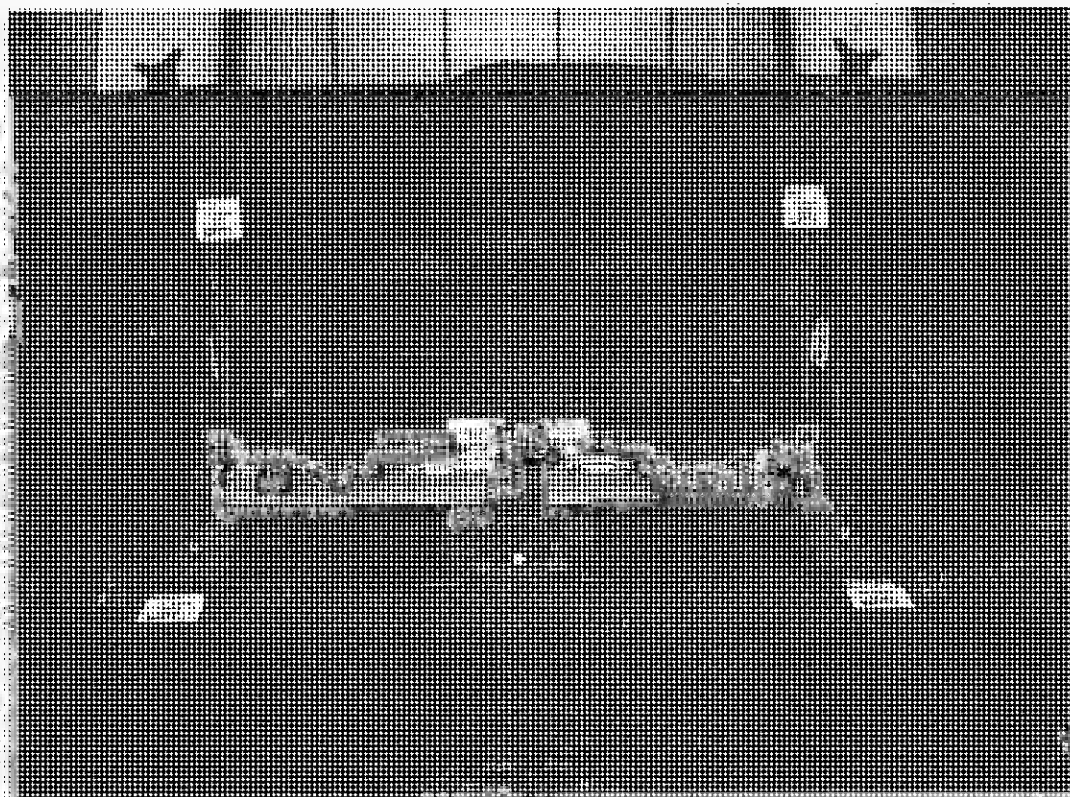


Figure A-05c. Floor Pan Anchors, Rear Seat, Left Seat Back Overall: Post Test

A-107

201 JAN 24 01

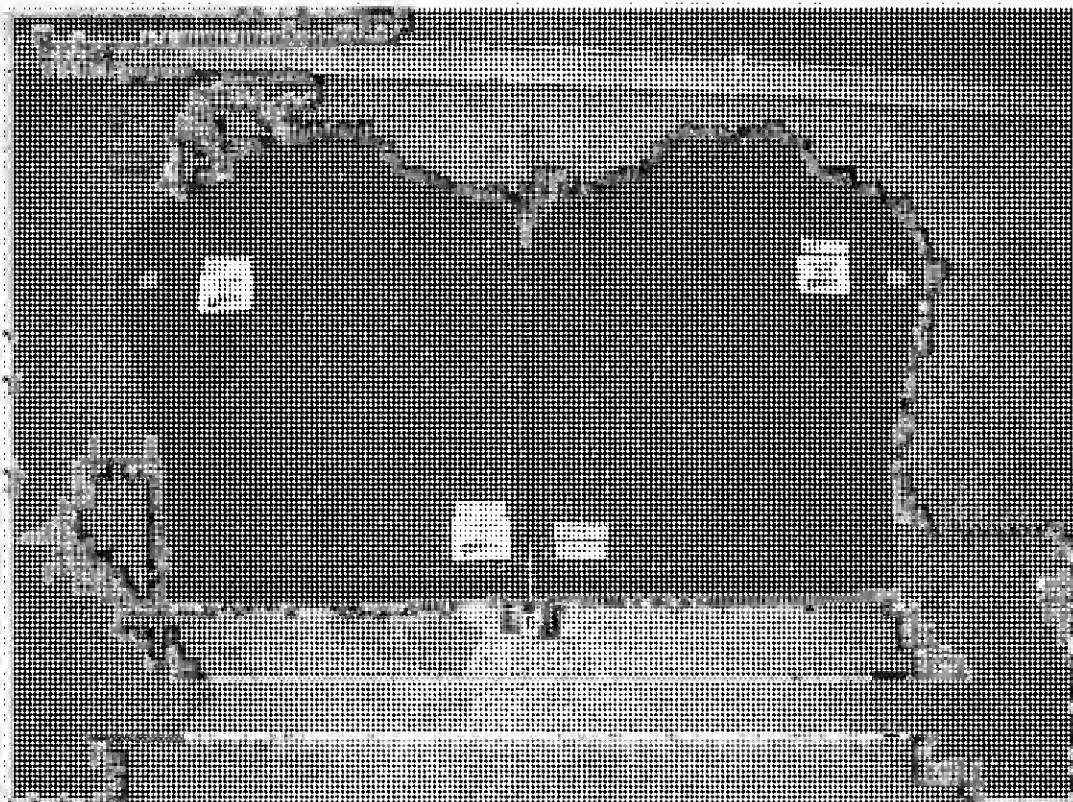


Figure A-107: Seat Anchors, Rear Seat, Left Seat Back Overall, Pre-Test

A-108

201 JAN 24 01

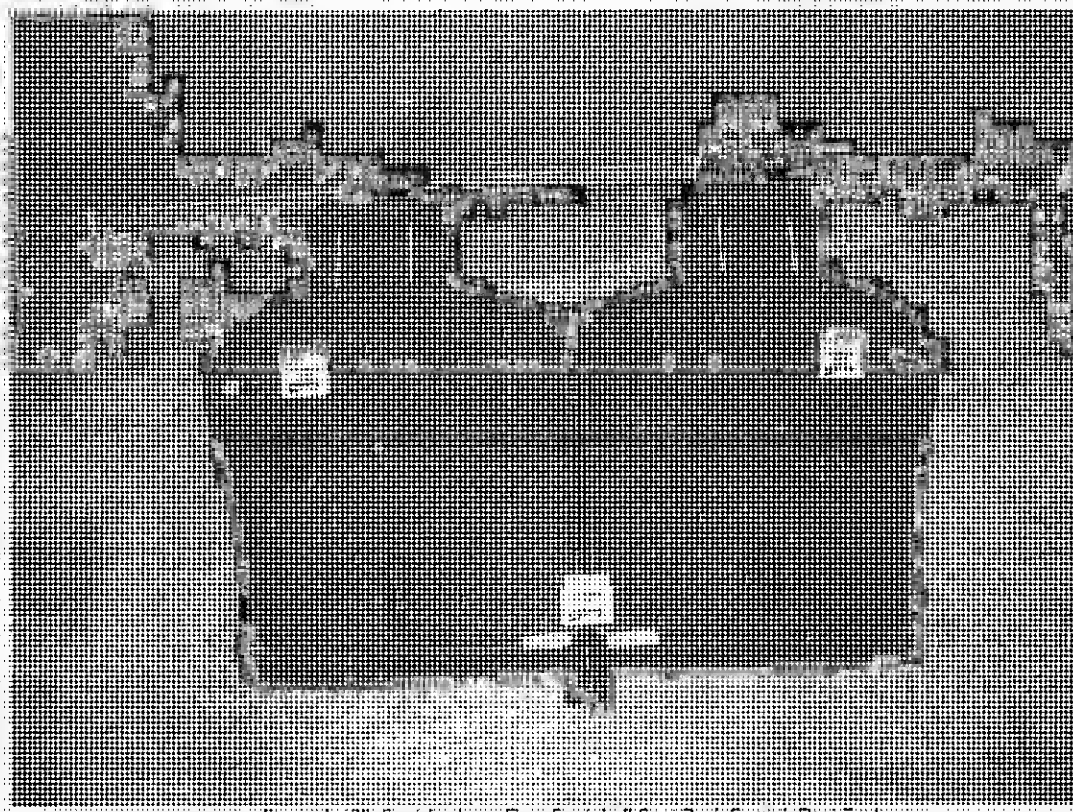


Figure A-108: Seat Anchors, Rear Seat, Left Seat Back Overall, Post-Test

601A

15-90-0000-100

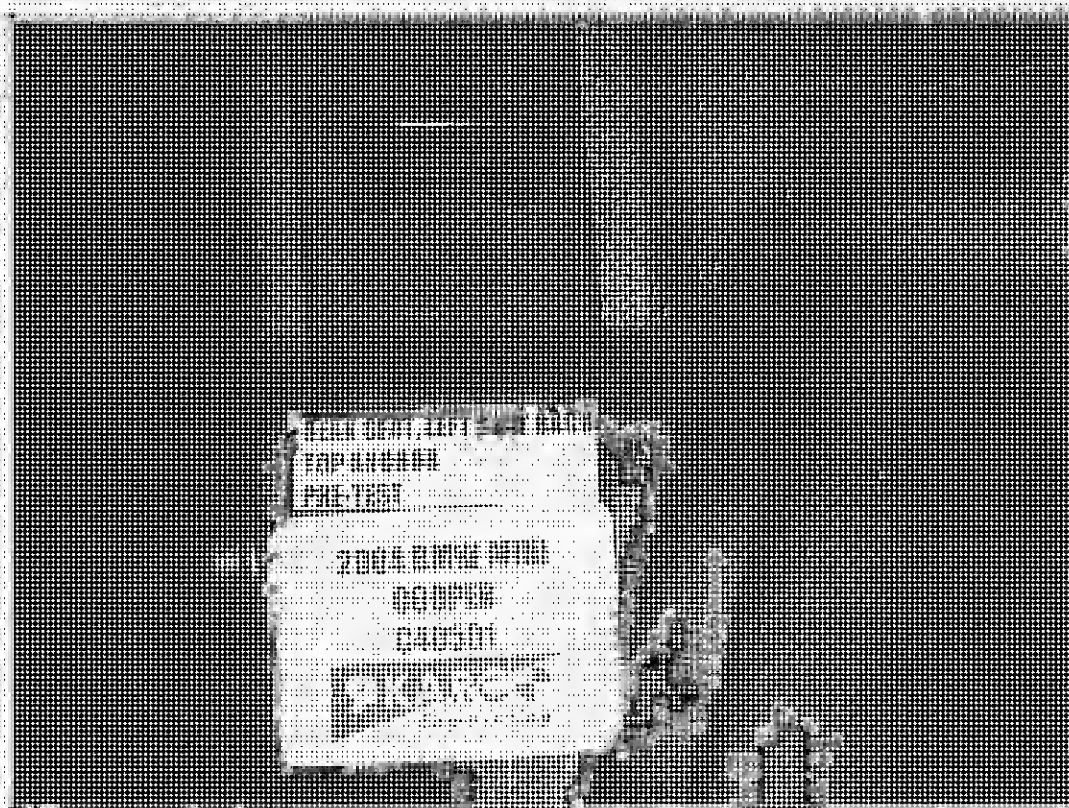


Figure A-119: Floor Pan Anchor, Rear Seat, Left Seat Back, Port Side

601B

15-90-0000-100



Figure A-110: Floor Pan Anchor, Rear Seat, Left Seat Back, Port Side

AS-11

2004-04-15-11



Figure A-11: Stair Anchor - Rear Seat, Left Seat Back, Pre-Test

AS-12

2004-04-15-12



Figure A-12: Stair Anchor - Rear Seat, Left Seat Back, Post-Test

A-13

2017-03-06-01



Figure A-13: Floor Pan Anchor, Rear Seat, Left Seat Back, Pile Foot

A-14

2017-03-06-01



Figure A-14: Floor Pan Anchor, Rear Seat, Left Seat Back, Pile Foot

A-115

207/552-06301

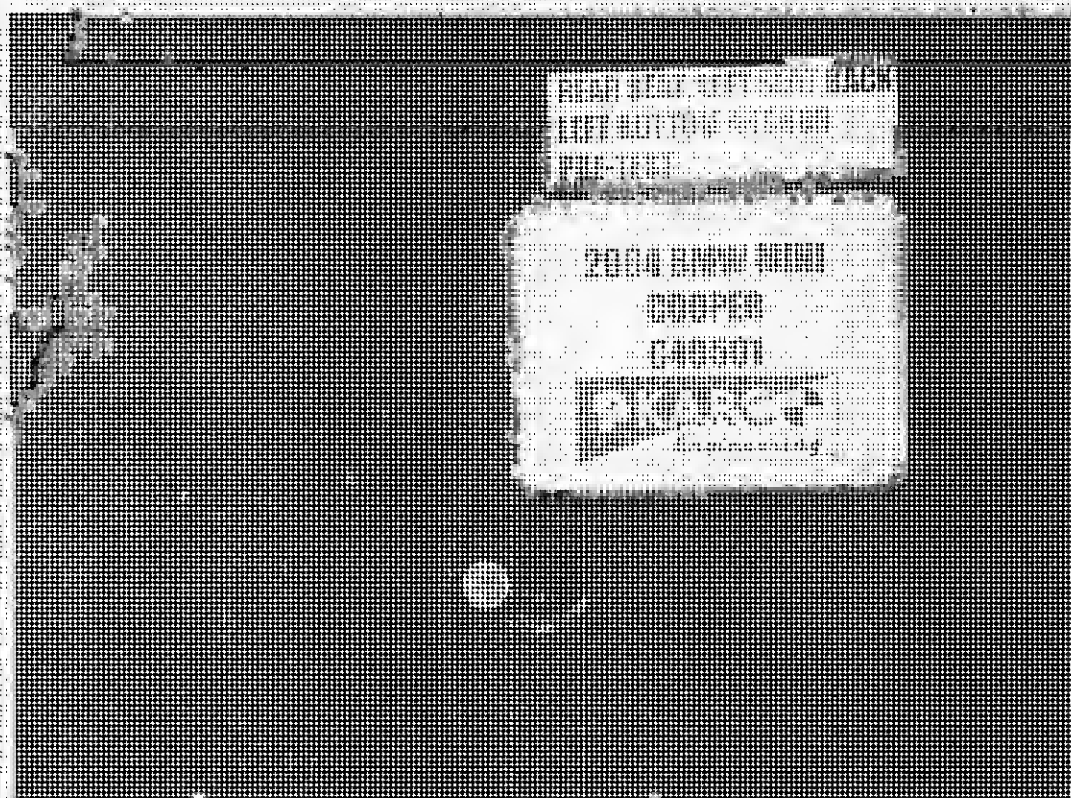


Figure A-115: Boat Anchor, Rear Seat, Left Seat Back, Right Seat

A-115

207/552-06301

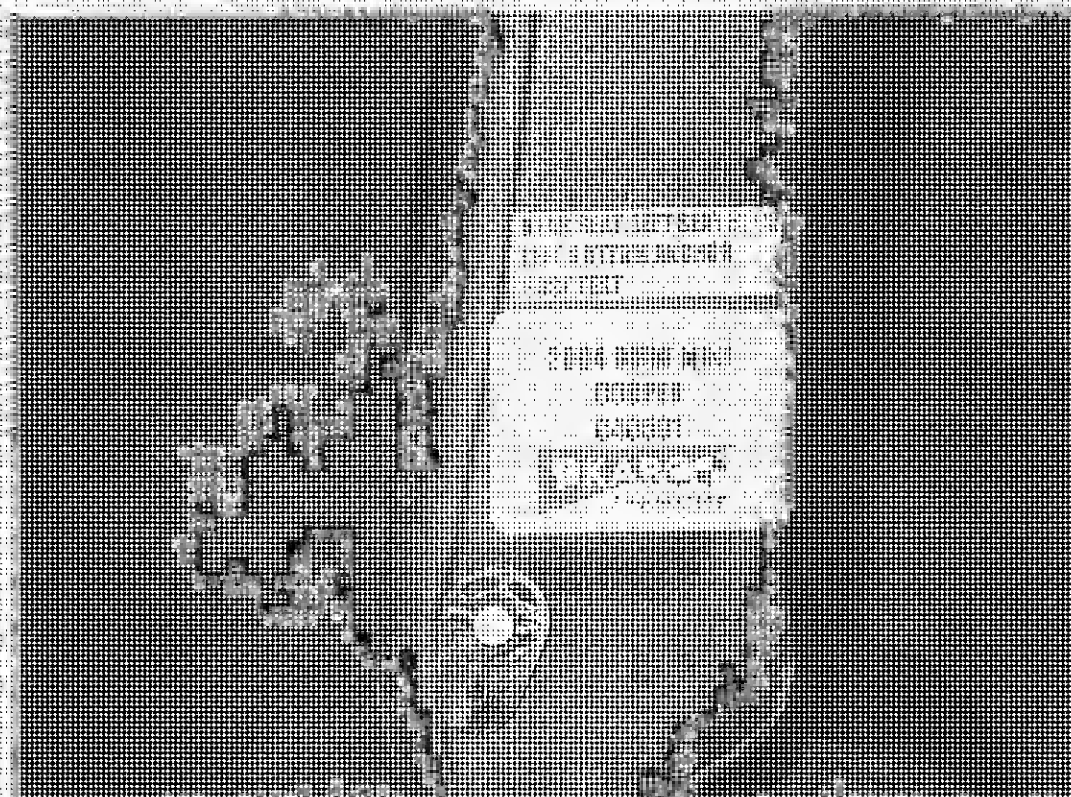


Figure A-115: Boat Anchor, Rear Seat, Left Seat Back, Right Seat

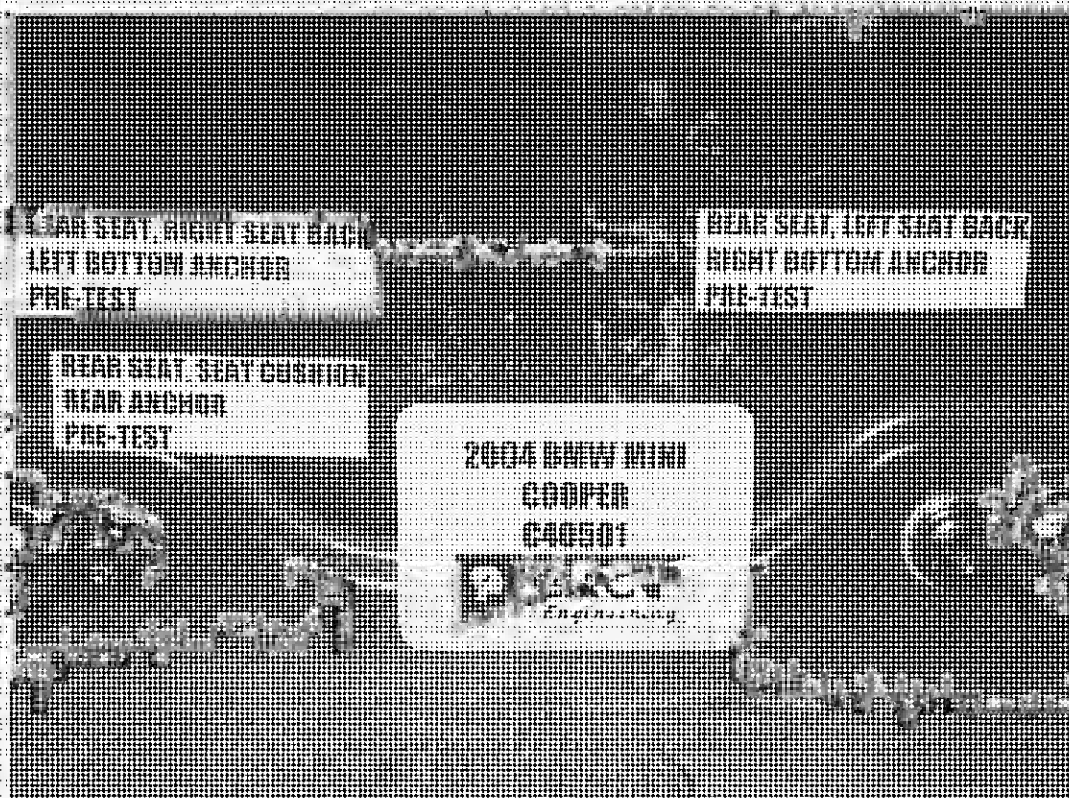


Figure A-117: Floor Pan Anchor, Rear Seat Left Seat Back, Pre-Test

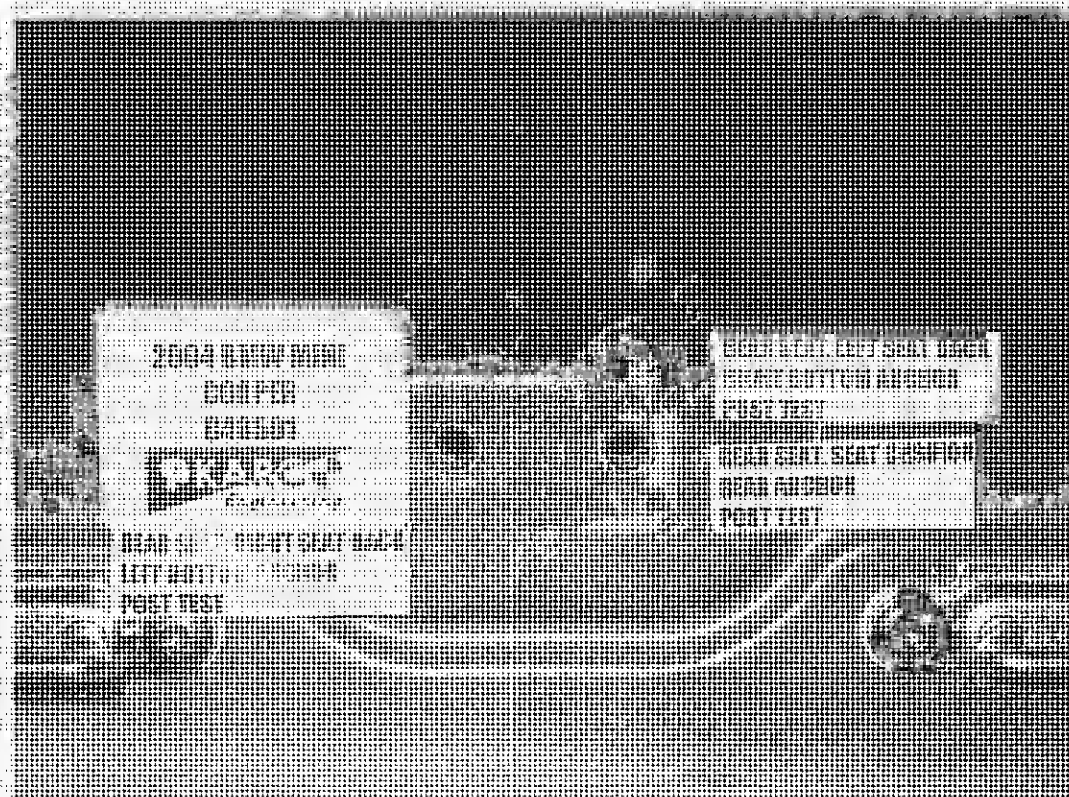


Figure A-118: Floor Pan Anchor, Rear Seat Left Seat Back, Post-Test

A-119

200-298-100



Figure A-119: Seat Anchor, Rear Seat, Left Seat Back, Pre-Test

A-120

200-298-100

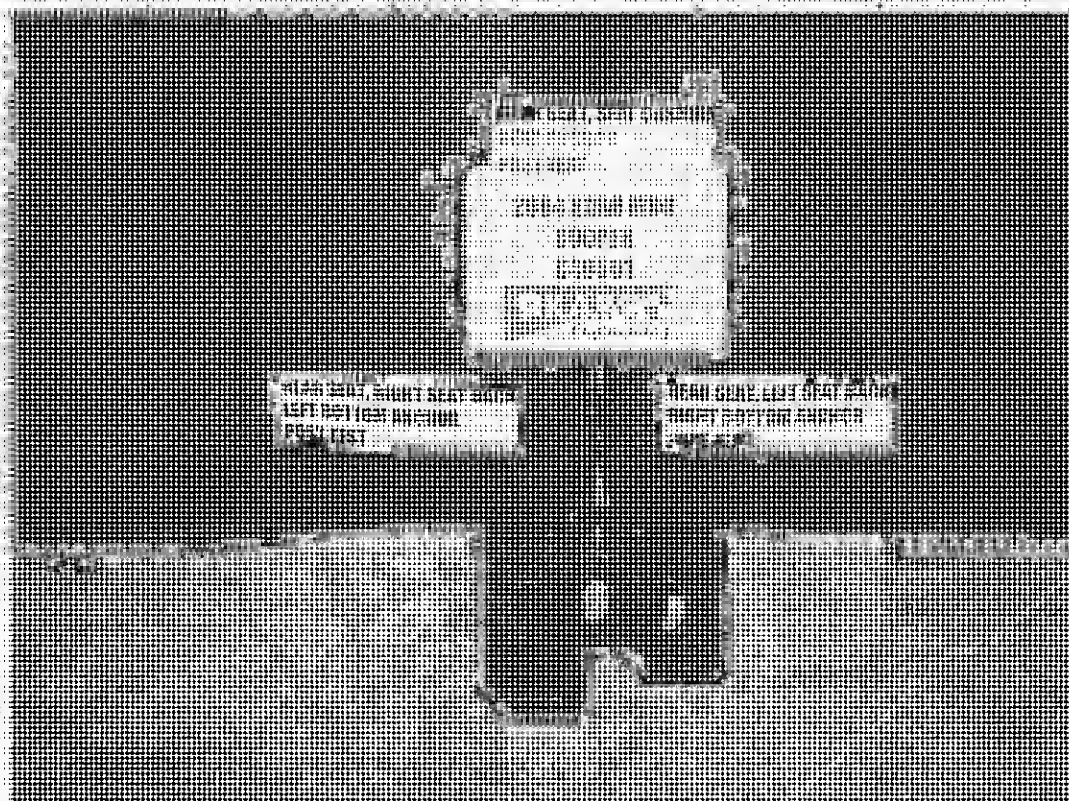


Figure A-120: Seat Anchor, Rear Seat, Left Seat Back, Post-Test

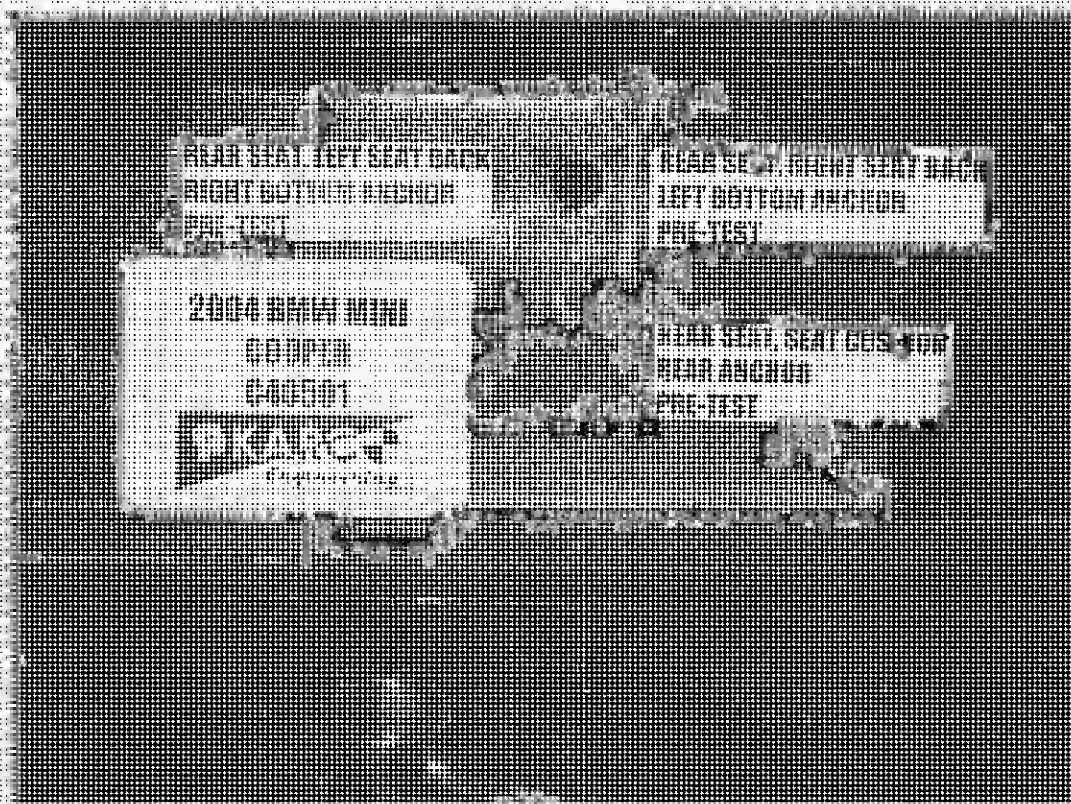


Figure A-121: Floor Pan Anchor, Rear Seat, Left Seat Back, Pre-Test



Figure A-122: Floor Pan Anchor, Rear Seat, Left Seat Back, Post-Test

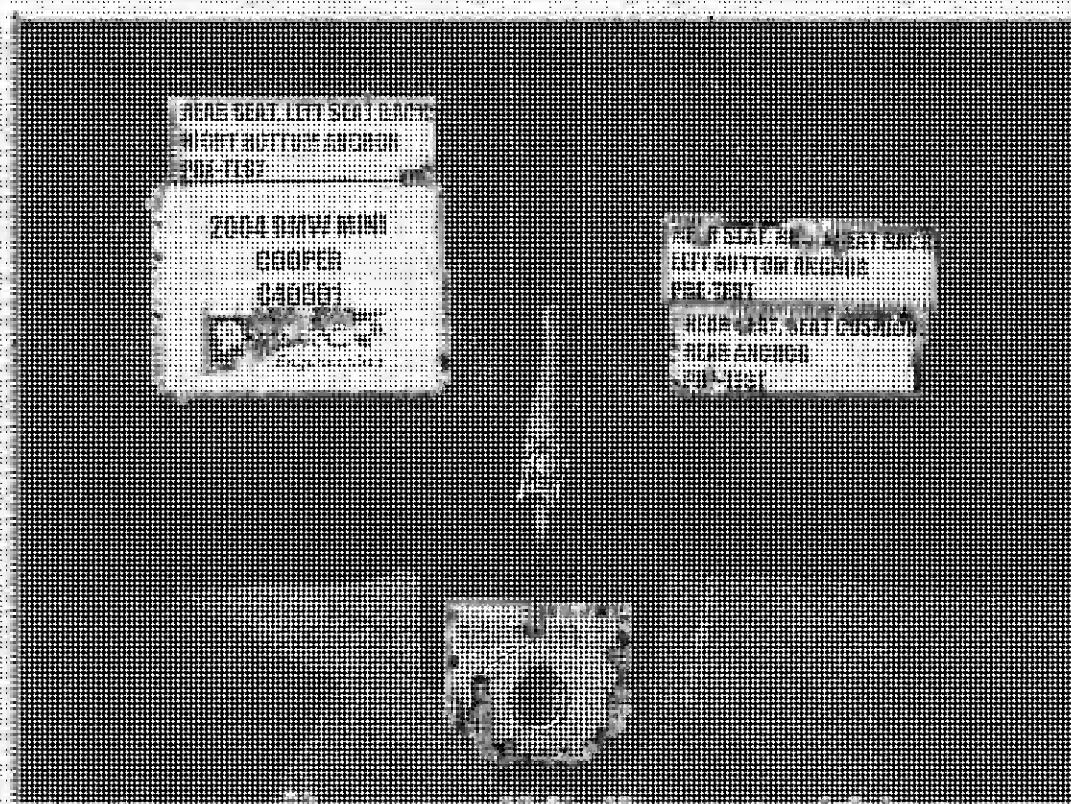


Figure A-123: Seat Anchor, Rear Seat, Left Seat Back, Pre-1991

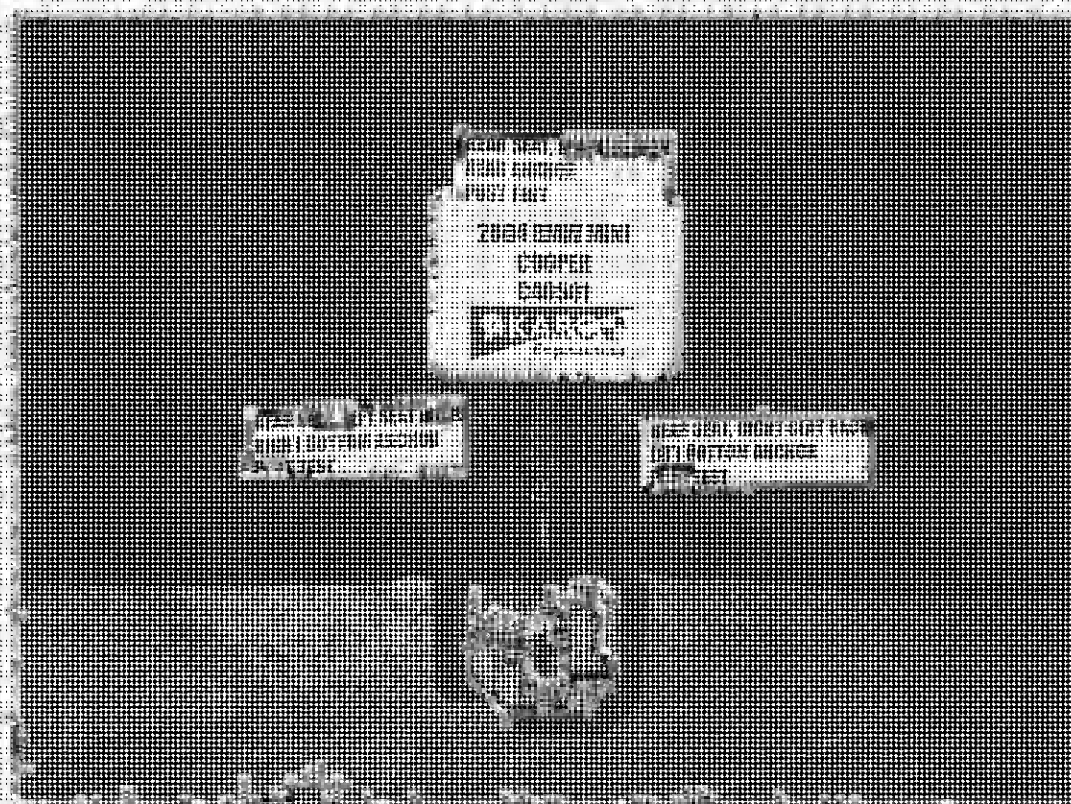


Figure A-124: Seat Anchor, Rear Seat, Left Seat Back, Post-1991

207 1043-1001

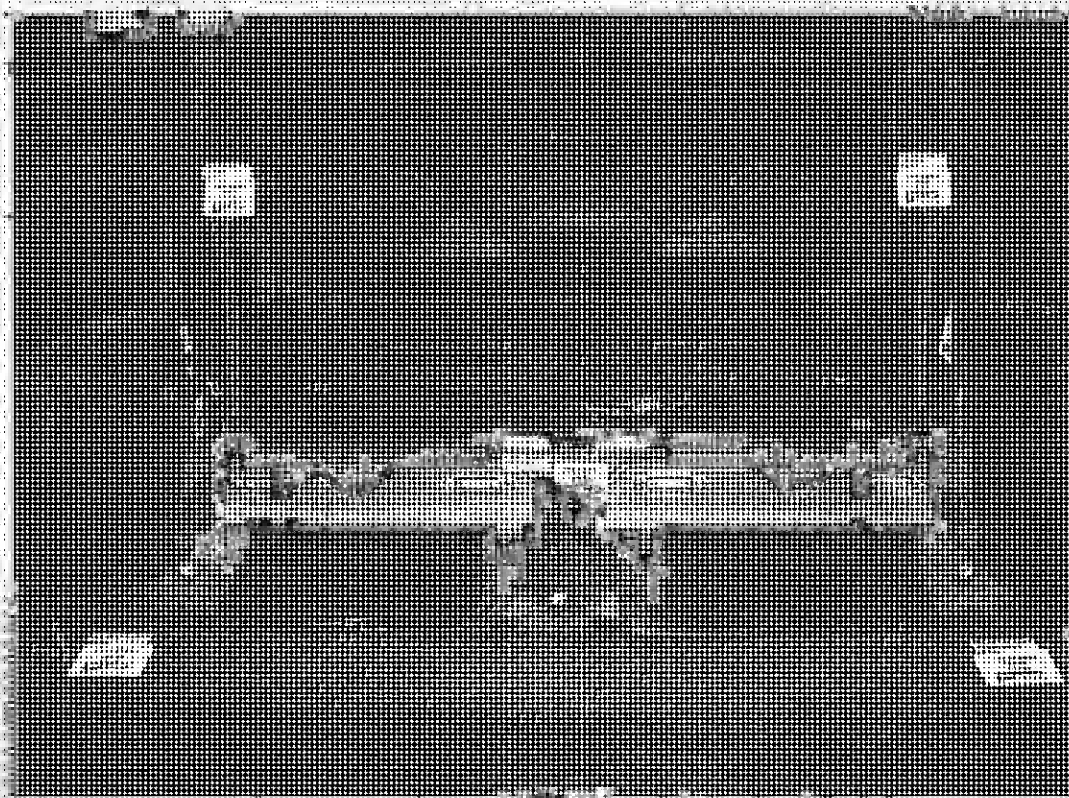


Figure A-120: Floor Plan Anchor, Rear Seat, Right Seat Back Overall, From Left

207 1043-1001

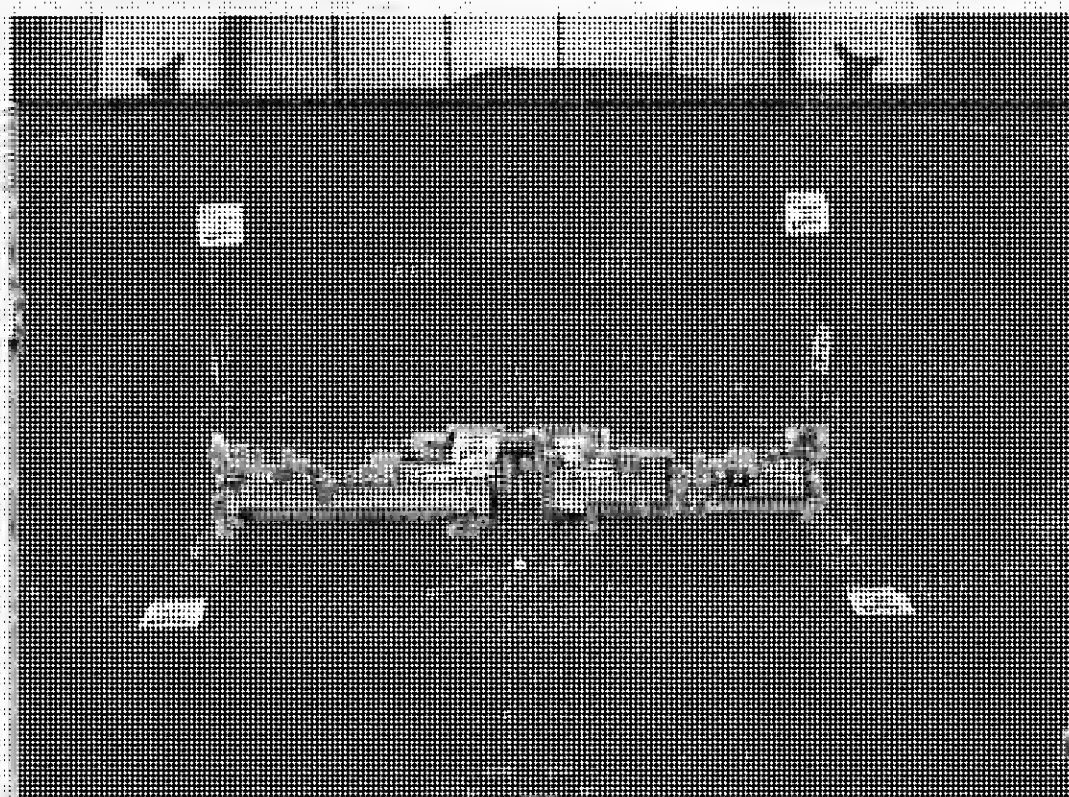


Figure A-121: Floor Plan Anchor, Rear Seat, Left Seat Back Overall, From Left

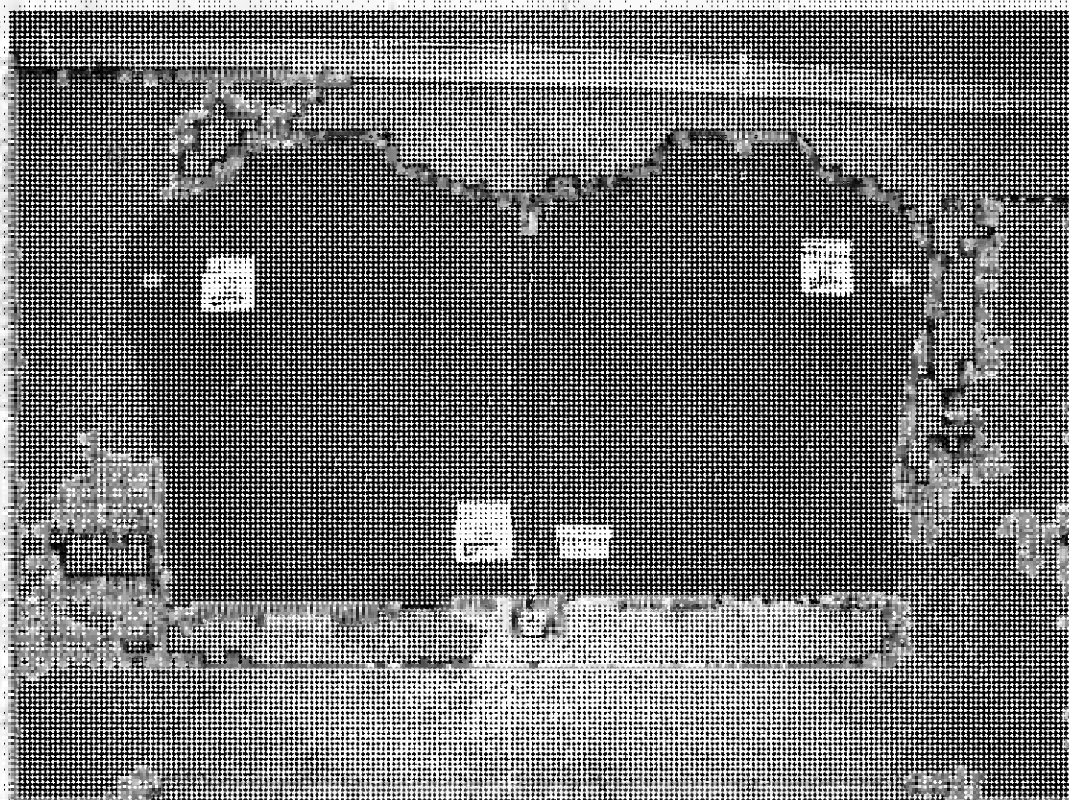


Figure A-121. Seat Anchor, Rear Seat, Right Seat Back Overlaid, Pre-Test

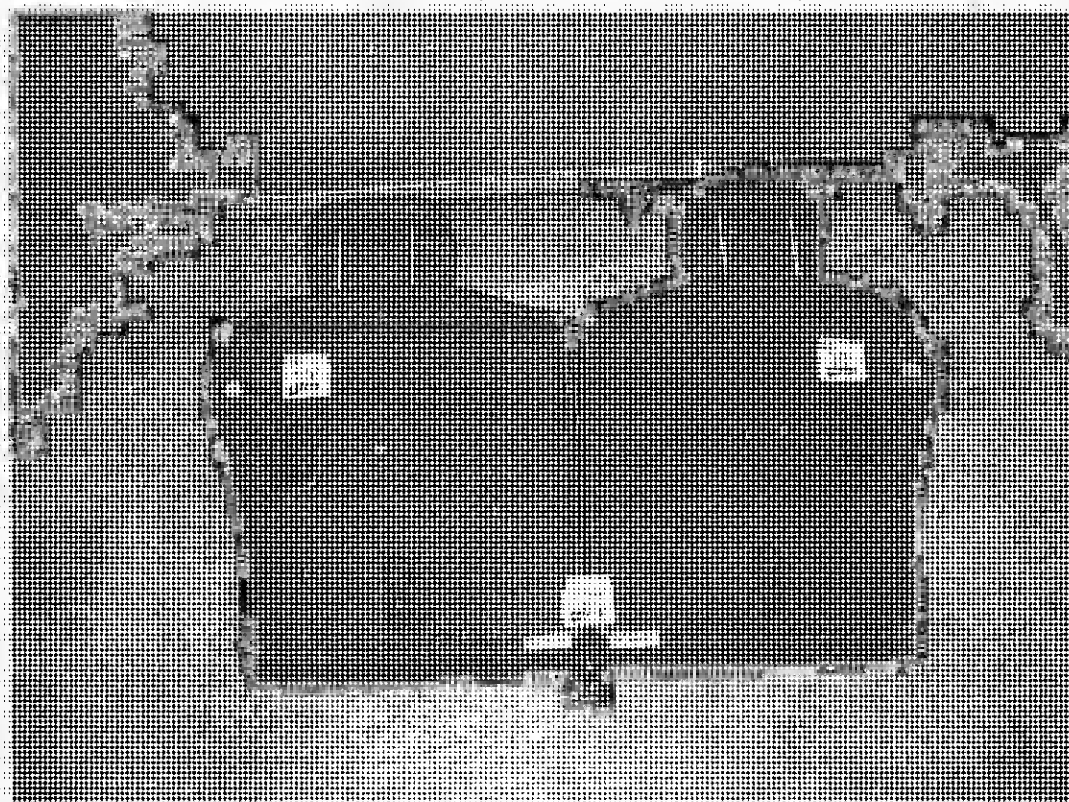


Figure A-124: Floor Pan Anchor, Rear Seat, From Seat Back Overall, Front-View

Figure A-1-29

Figure A-1-30



Figure A-1-29. Floor Plan Anchor, Rear Seat, Right Seat Back, Post-Test

Figure A-1-30

Figure A-1-31

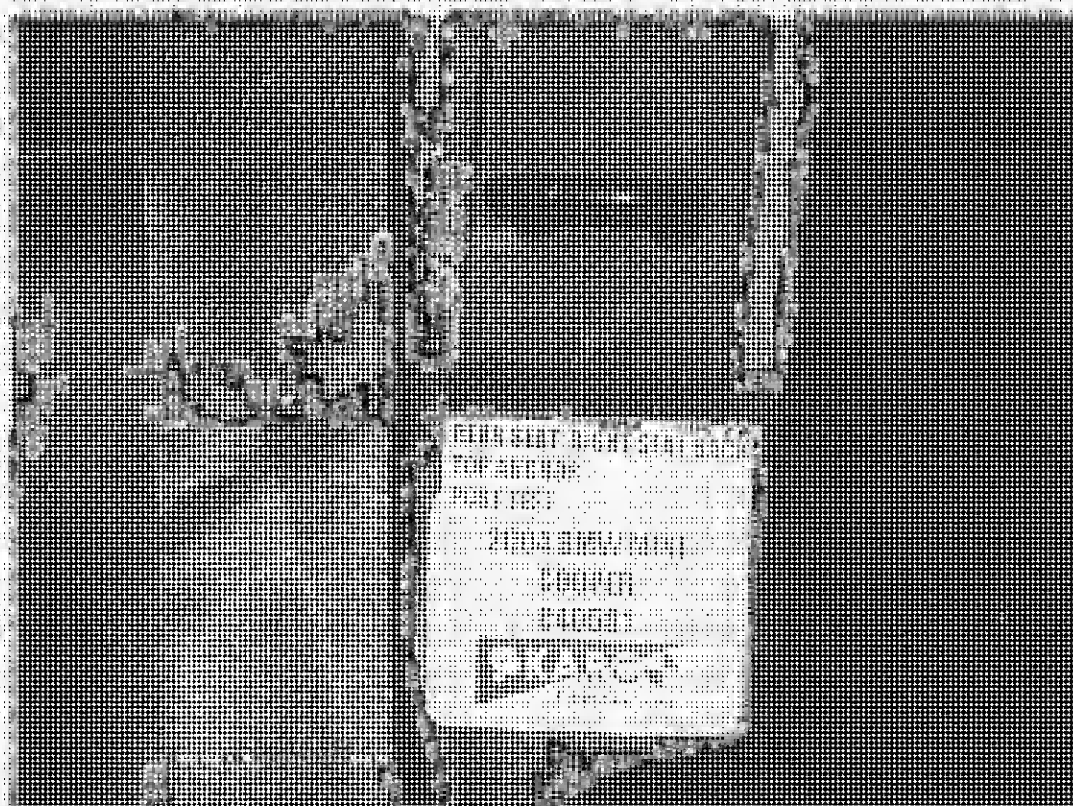


Figure A-1-30. Floor Plan Anchor, Rear Seat, Right Seat Back, Post-Test

619

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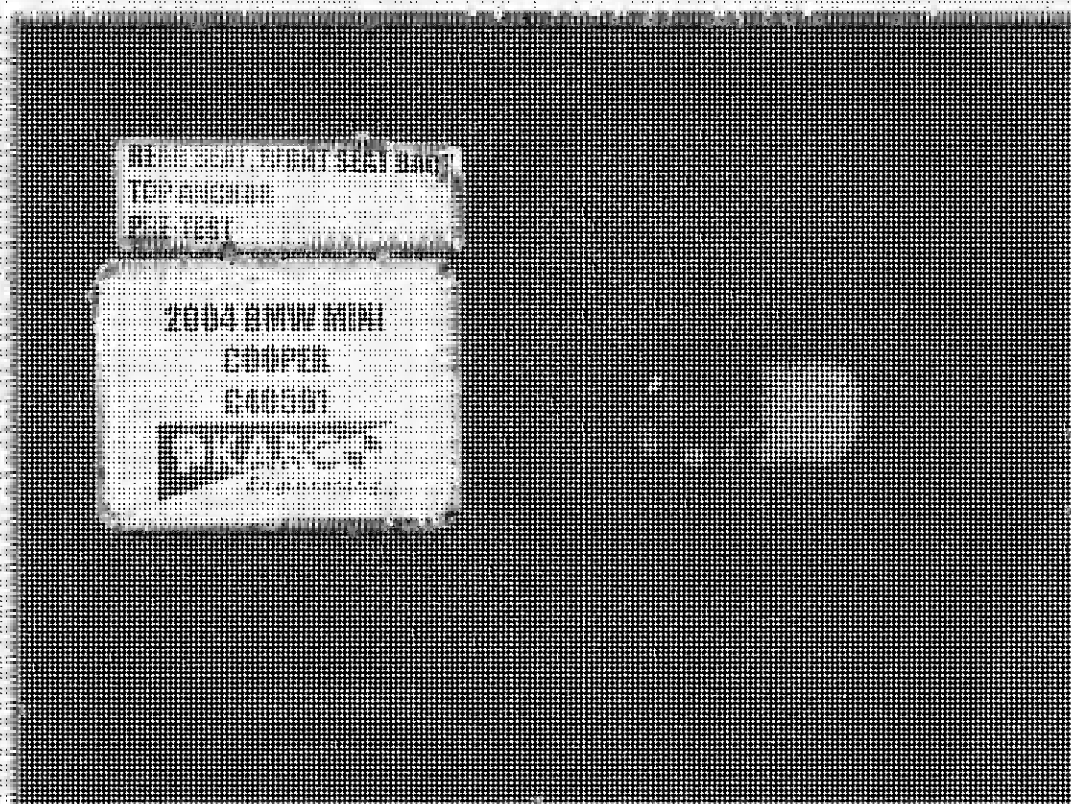


Figure A-131: Seat Anchor, Rear Seat, Right Seat Back, Pre-Test

619

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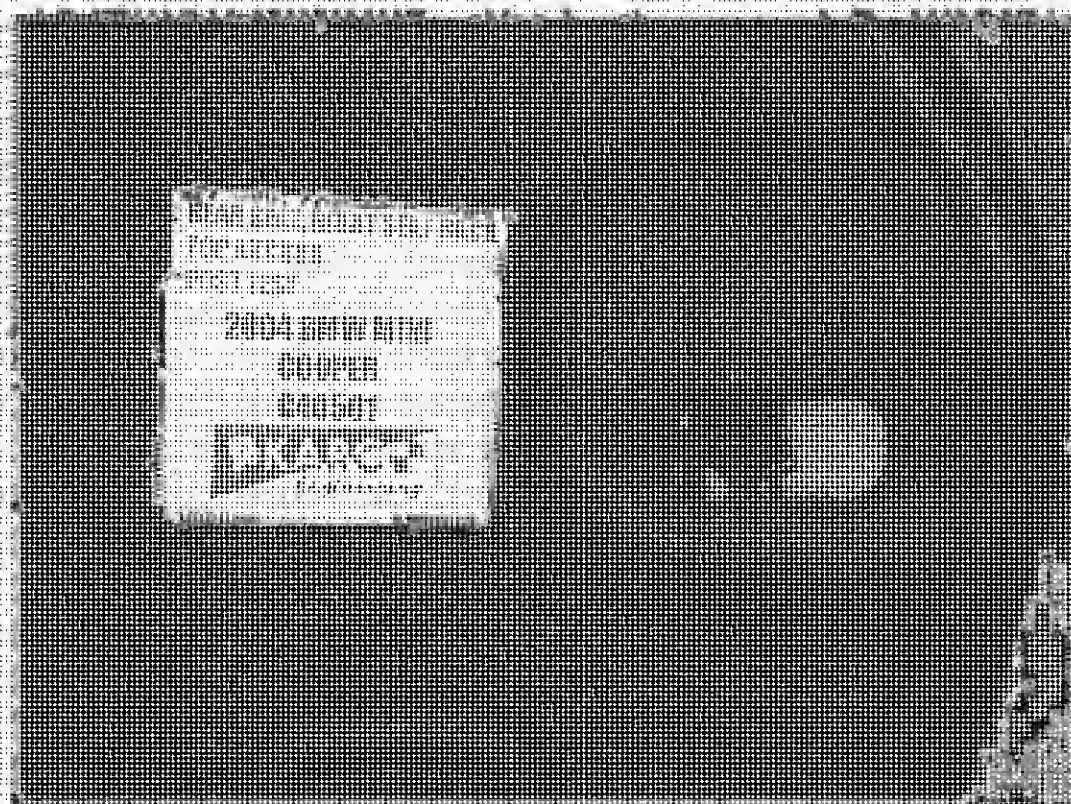


Figure A-132: Seat Anchor, Rear Seat, Right Seat Back, Post-Test

h-123

2004-04-01

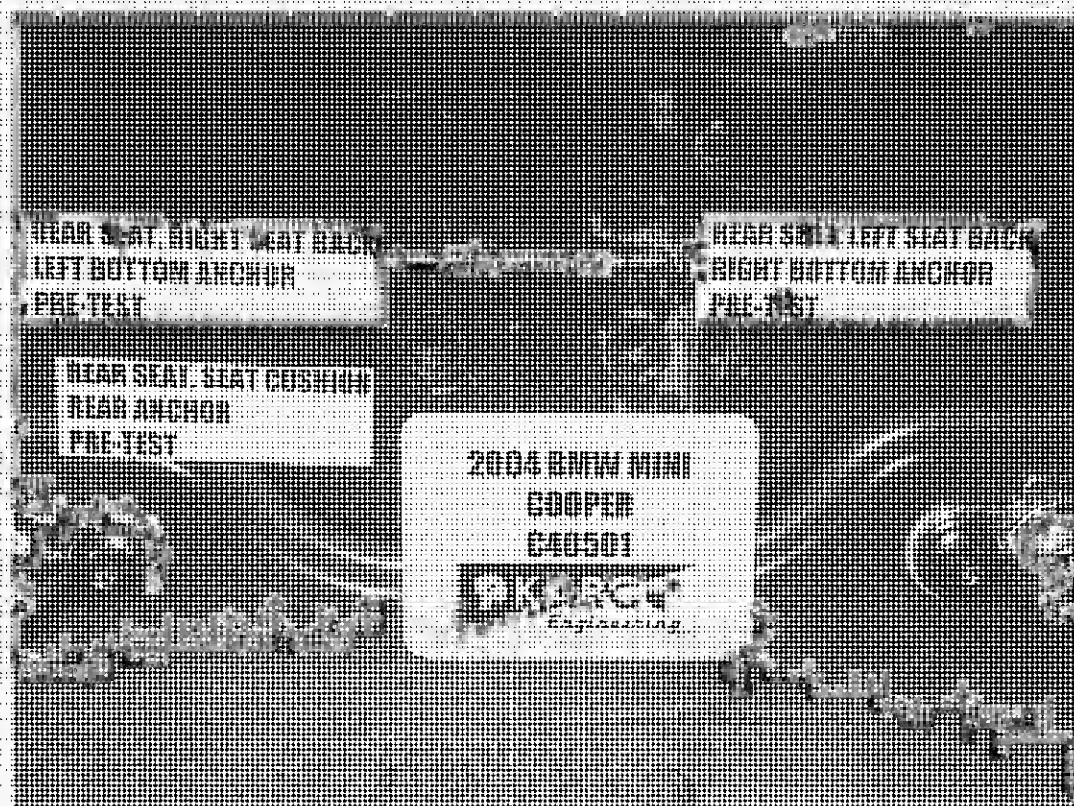


Figure A-123. Floor Pan Anchor, Rear Seat, Right Seat Back, Pre-Test

h-124

2004-04-01

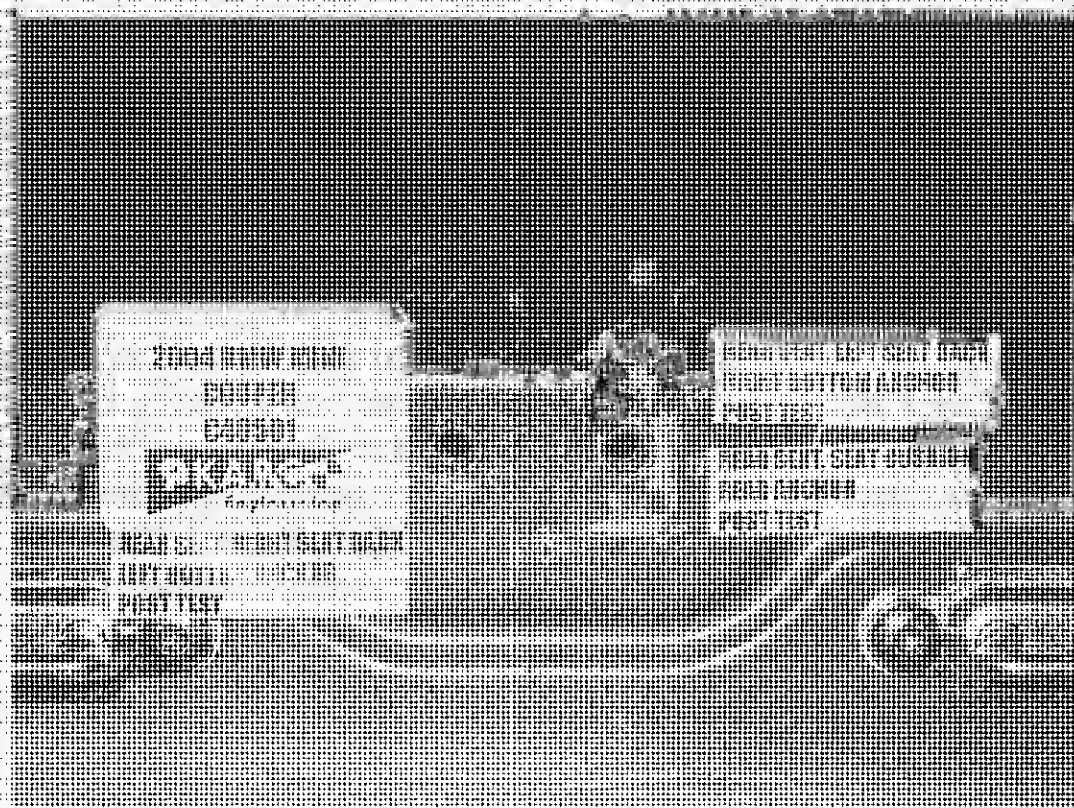


Figure A-124. Floor Pan Anchor, Rear Seat, Right Seat Back, Post-Test

A-118

300-145-14-01

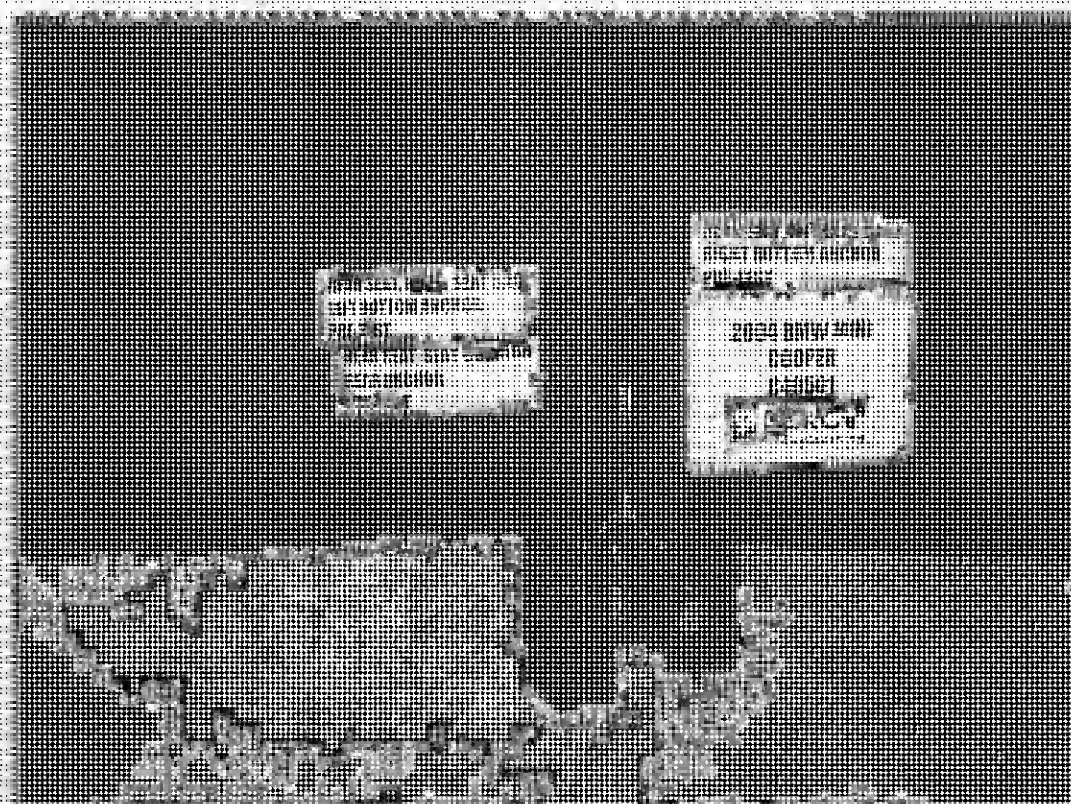


Figure A-135: Seat Anchor, Rear Seat, Right Seat Back, Pre-Test

A-136

300-145-14-01

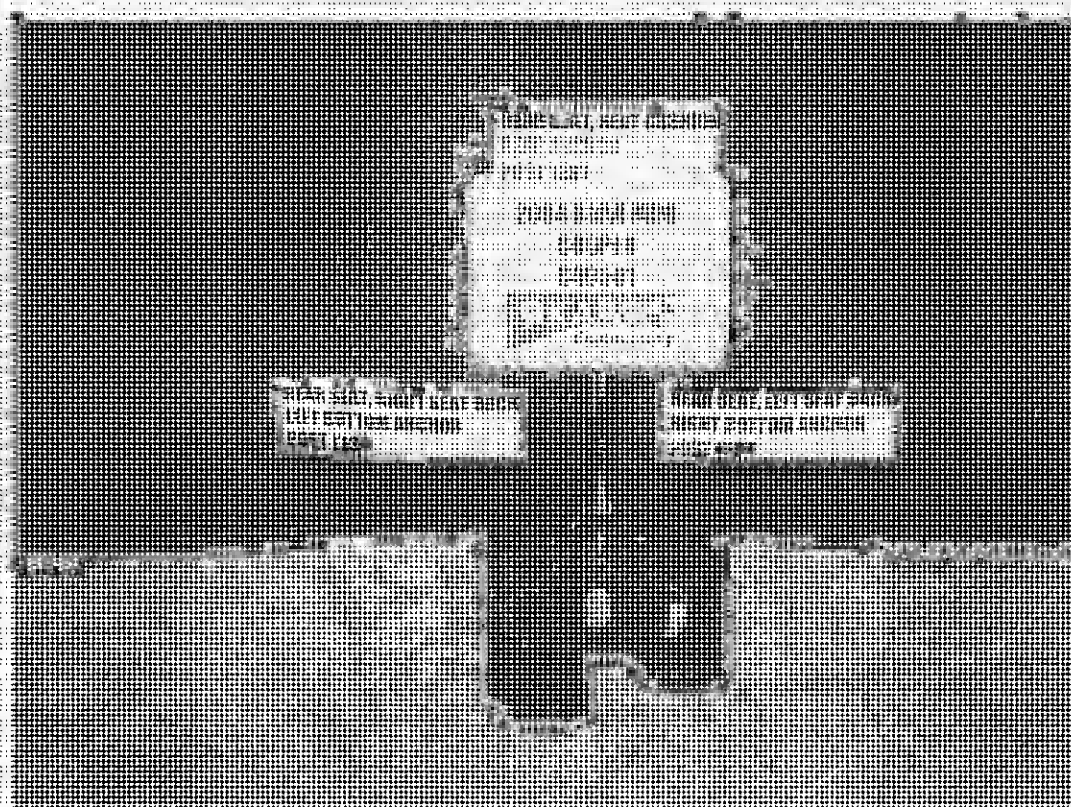


Figure A-136: Seat Anchor, Rear Seat, Right Seat Back, Post-Test

Figure A-149

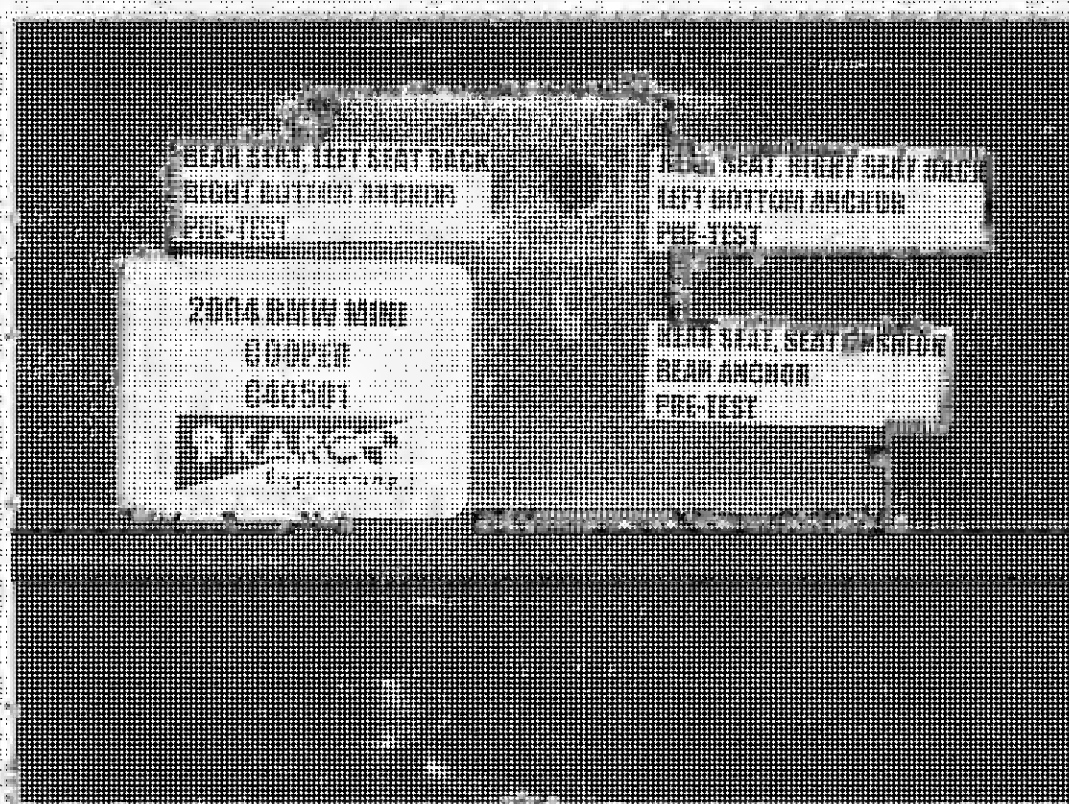


Figure A-149: Floor Plan Anchor, Rear Seat, Right Seat Back, Post-Test

Figure A-150



Figure A-150: Floor Plan Anchor, Rear Seat, Right Seat Back, Post-Test

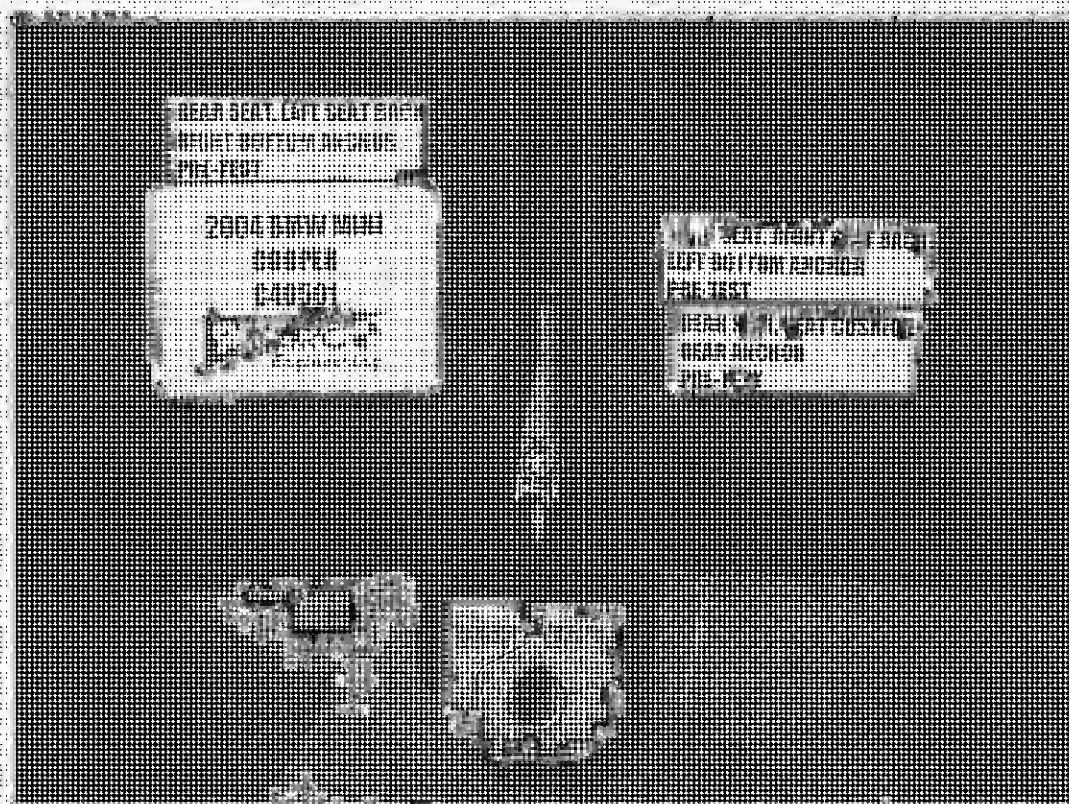


Figure A-139: Seat Anchor, Rear Seat, Right Seat Back, Pre-1995

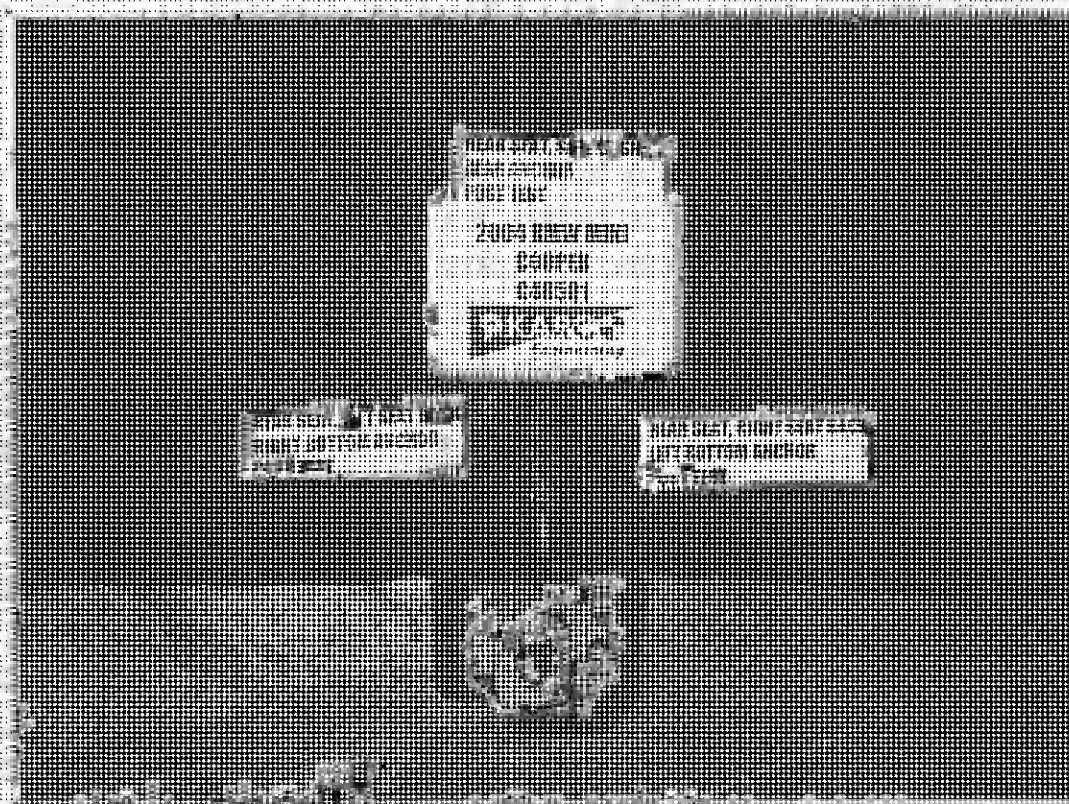


Figure A-140: Seat Anchor, Rear Seat, Left Seat Back, Post-1995

A-141

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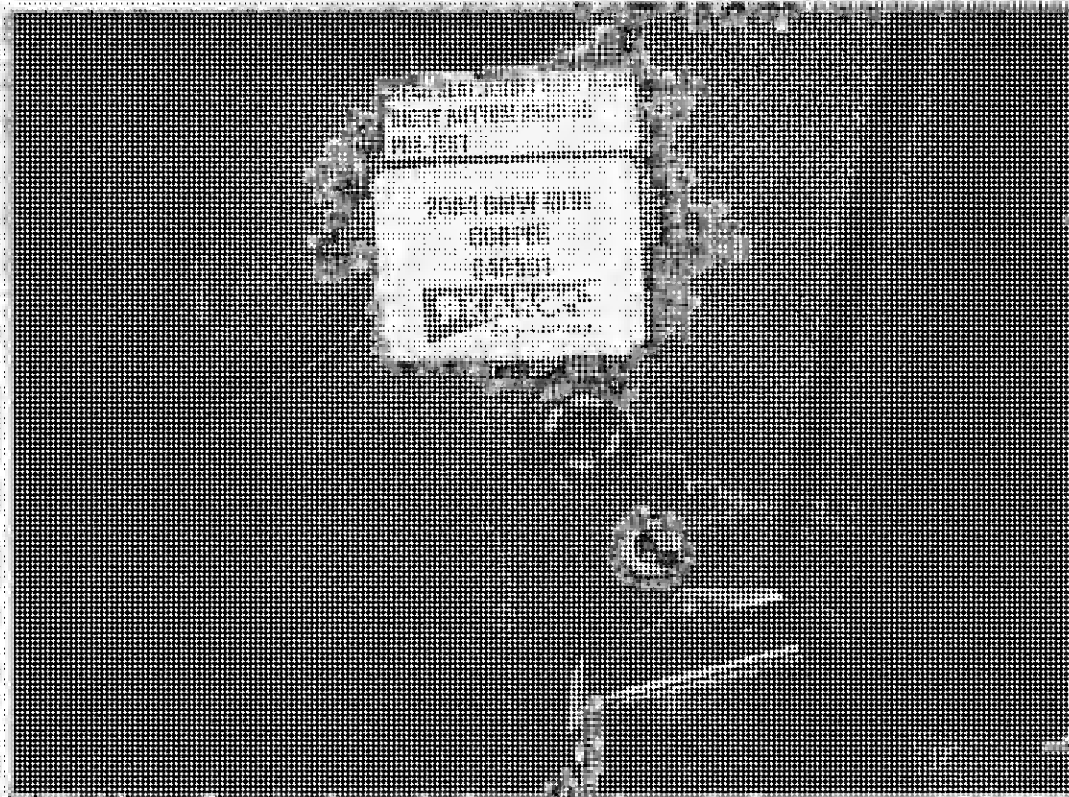


Figure A-141: Floor Plan A-141, Rear Shot, Right Rear Black, Pin-Fast

A-142

2007 NOV 05 05:51

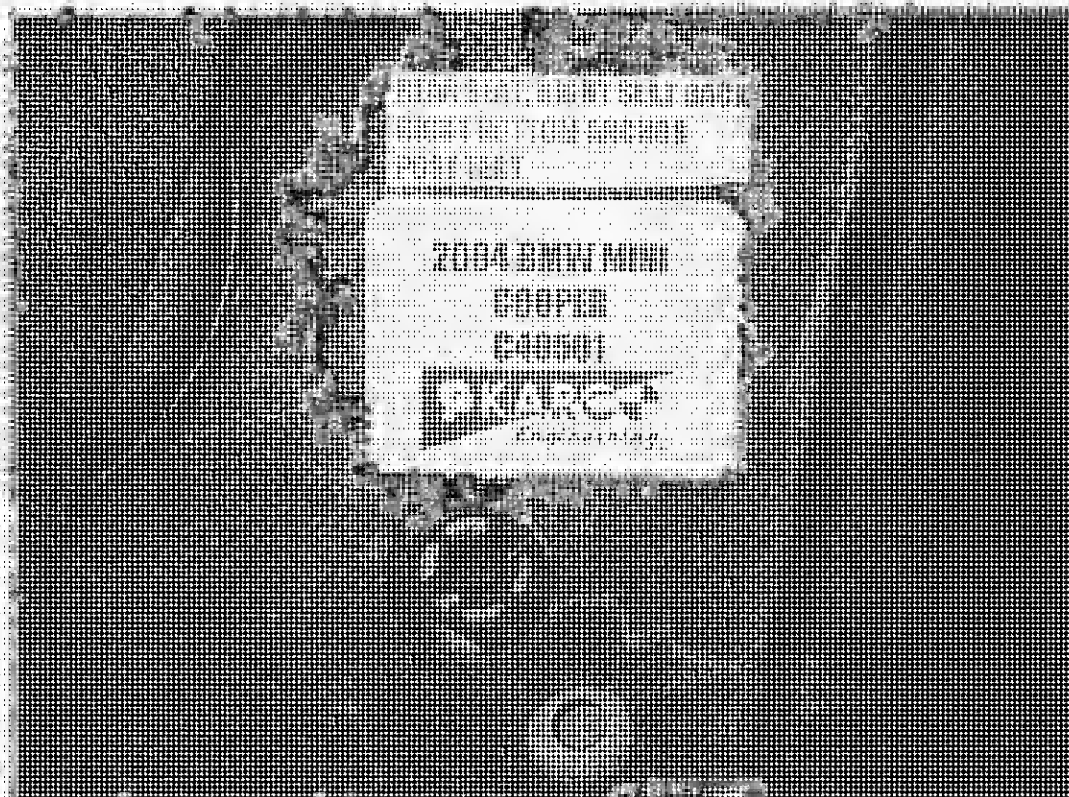


Figure A-142: Floor Plan A-142, Rear Shot, Right Shot Black, Pin-Fast

4-13

2004 BURN WIRE
CUTTING
TEST

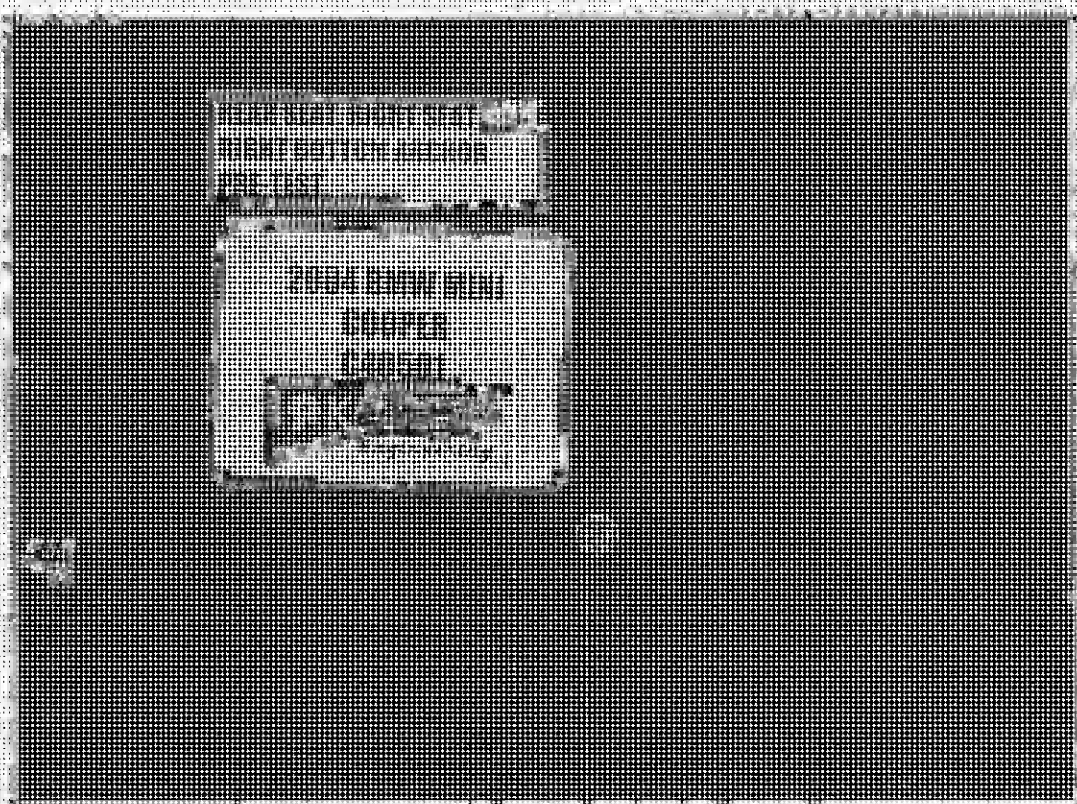


Figure A-43: Seat Anchor, Rear Seat, Right Seat Back, Pre-Test

4-14

2004 BURN WIRE
CUTTING
TEST

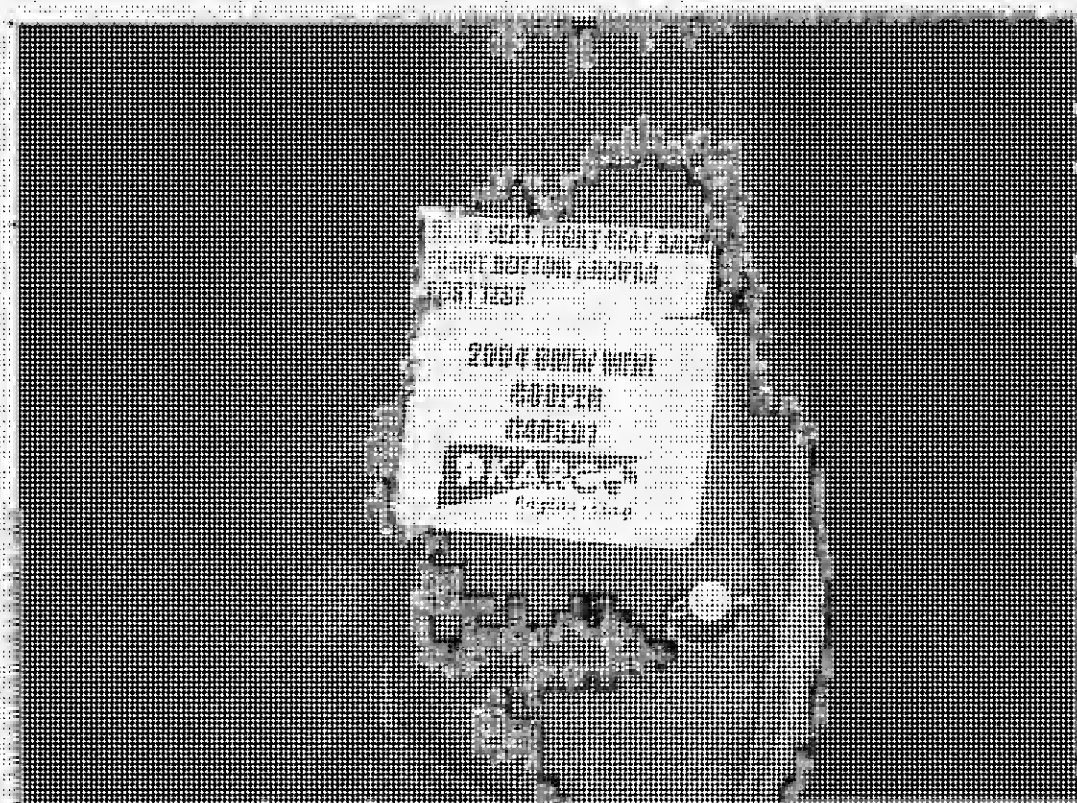
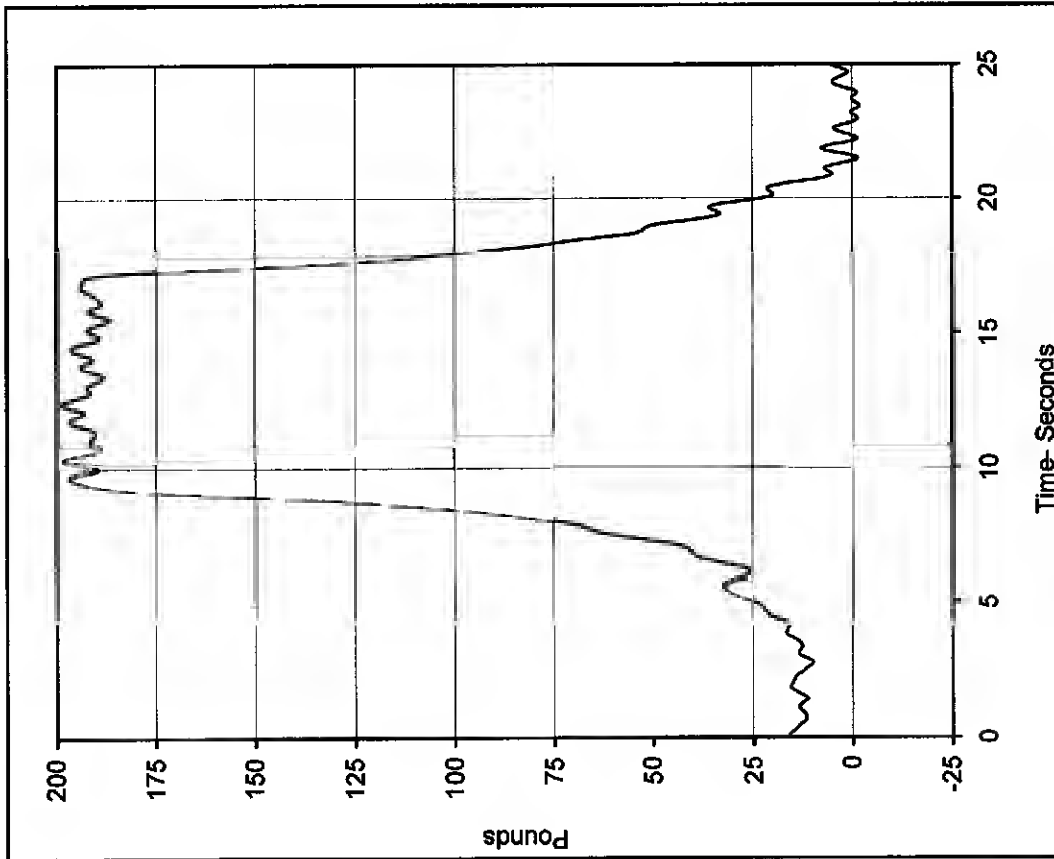


Figure A-44: Seat Anchor, Rear Seat, Right Seat Back, Post-Test

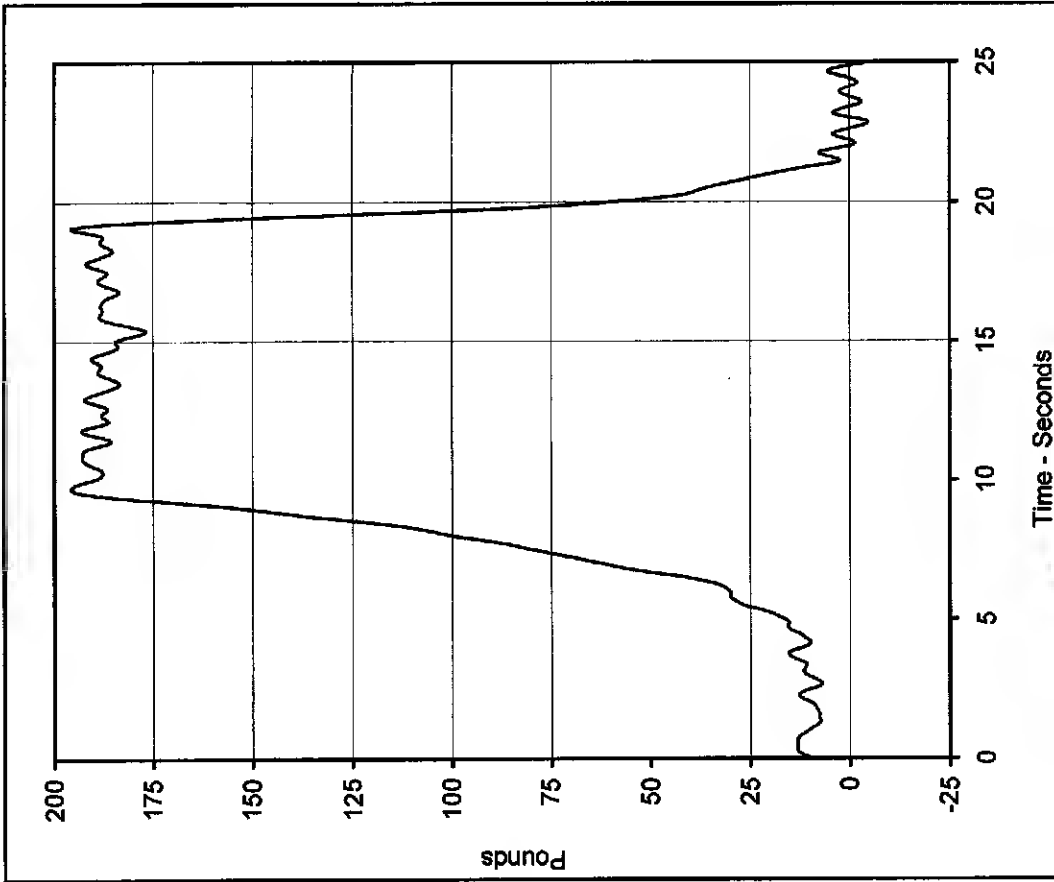
APPENDIX B
DATA PLOTS



Curve Description		CURNO	Type
Driver Aft Moment Load		001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	198.9	12.4	-1.9	23.5	1

Test Program: FMVSS 207 Aft Moment (Front)
 Test Vehicle: 2004 Mini Cooper 2-Door Coupe

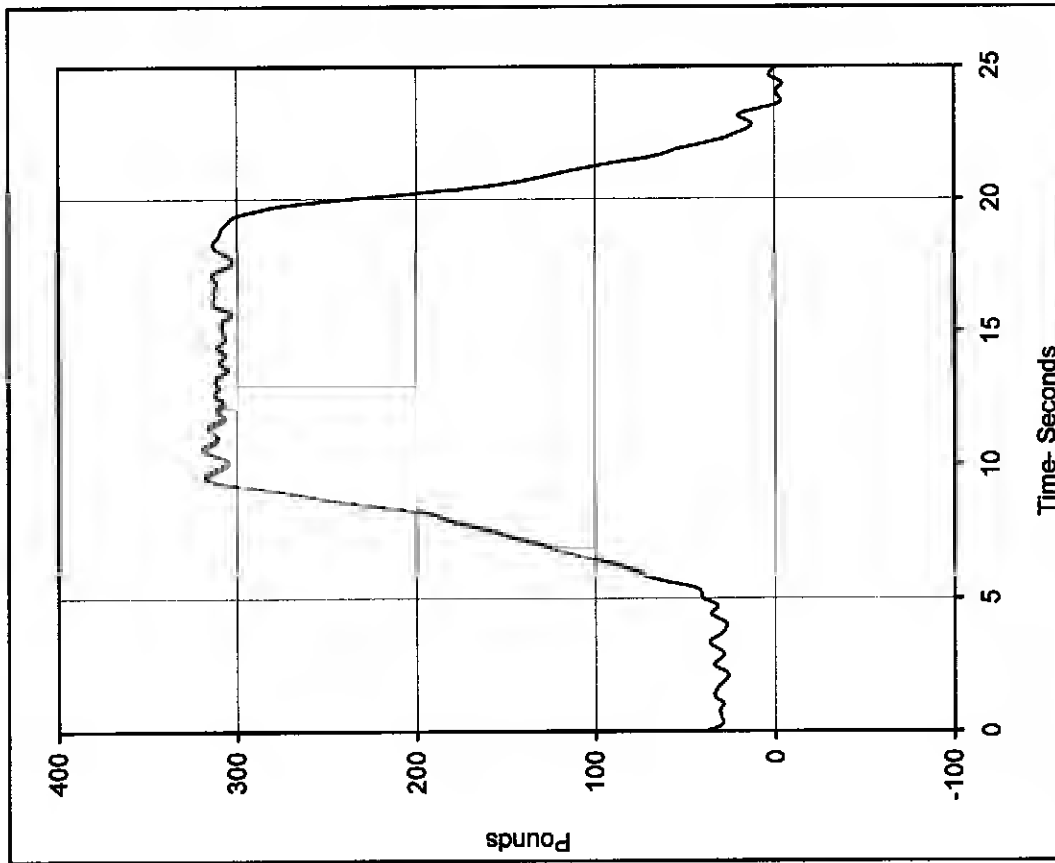


Curve Description		CURNO	Type
Pass. Aft Moment Load		002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	195.7	9.7	-4.6	22.9	1

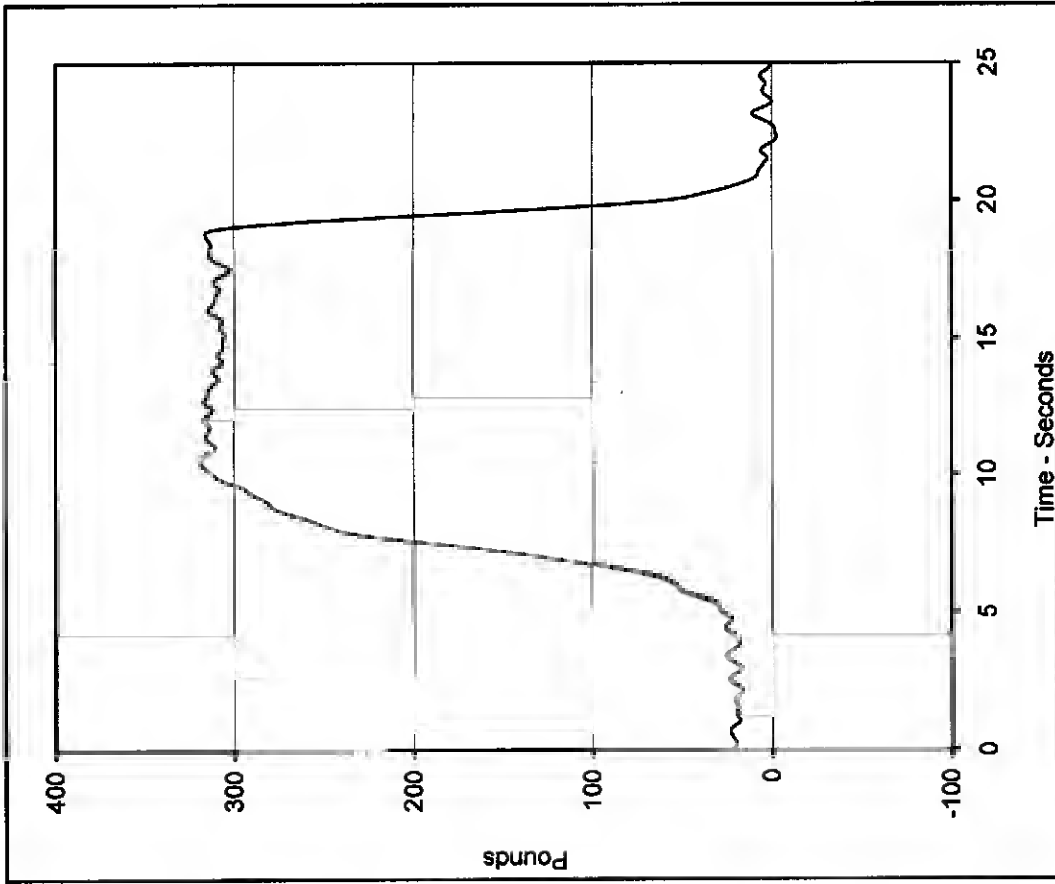
Test Date: 8/23/04
 Project No.: C40501





Curve Description	CURNO	Type
Driver Seat	001	FIL

Units	Max	Time	Min	Filter (Hz)
Pounds	319.0	10.6	-4.1	1



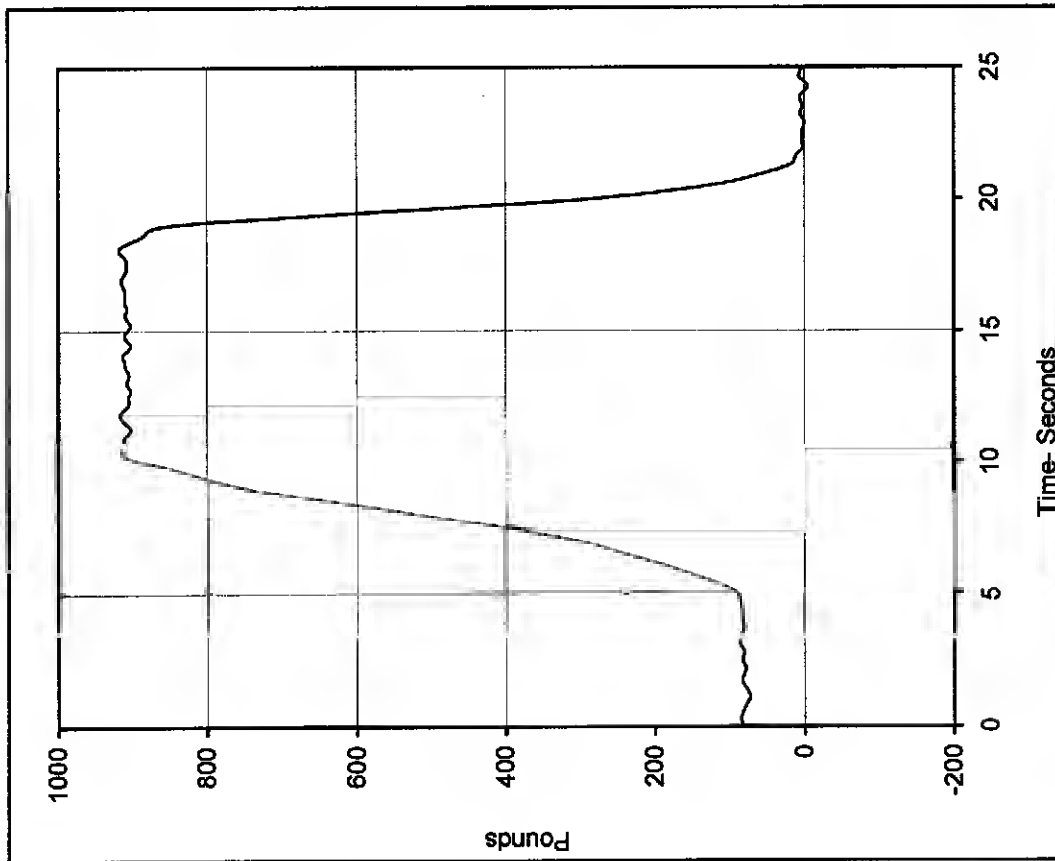
Curve Description	CURNO	Type
Pass. Seat	002	FIL

Units	Max	Time	Min	Filter (Hz)
Pounds	319.3	10.6	-2.6	1



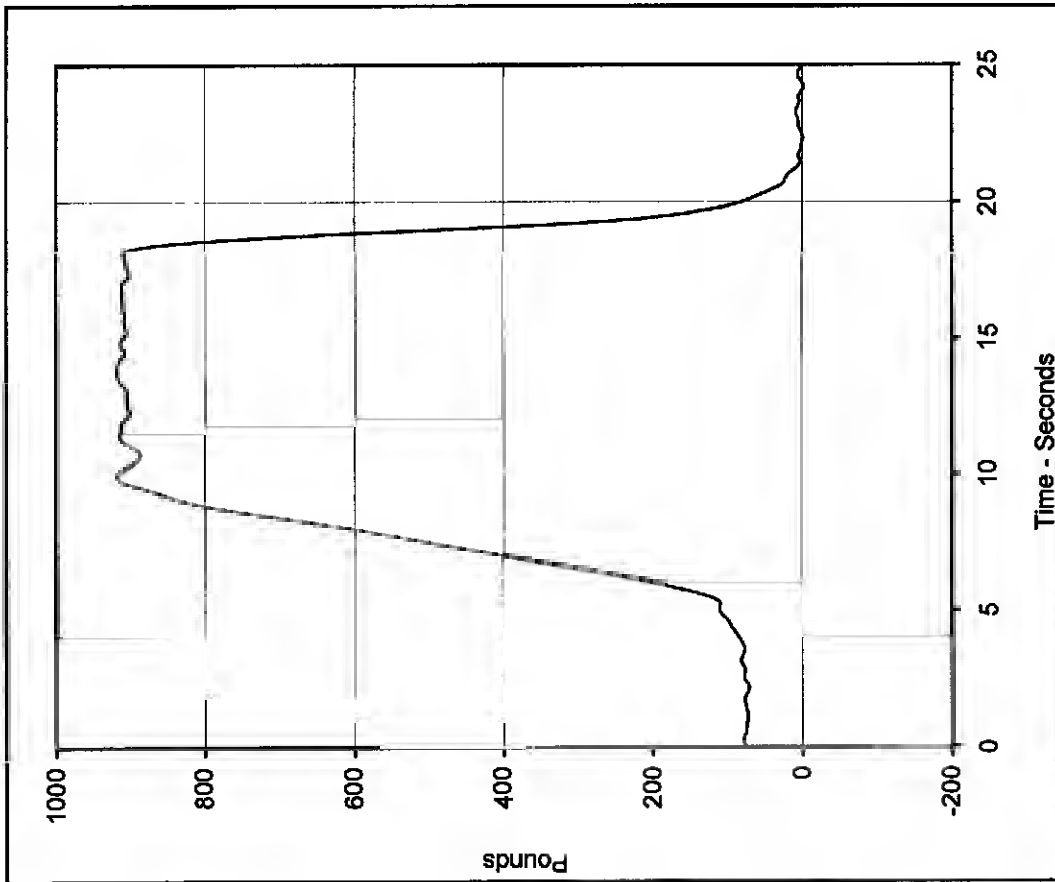
Test Date: 8/23/04
Project No.: C40501

Test Program: FMVSS 207 Fwd. Seat Frame and Adj. (No Strut)
Test Vehicle: 2004 Mini Cooper 2-Door Coupe



Curve Description		CURNO	Type	
Driver Seat		001	FIL	

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	918.7	18.1	-4.6	24.3	1



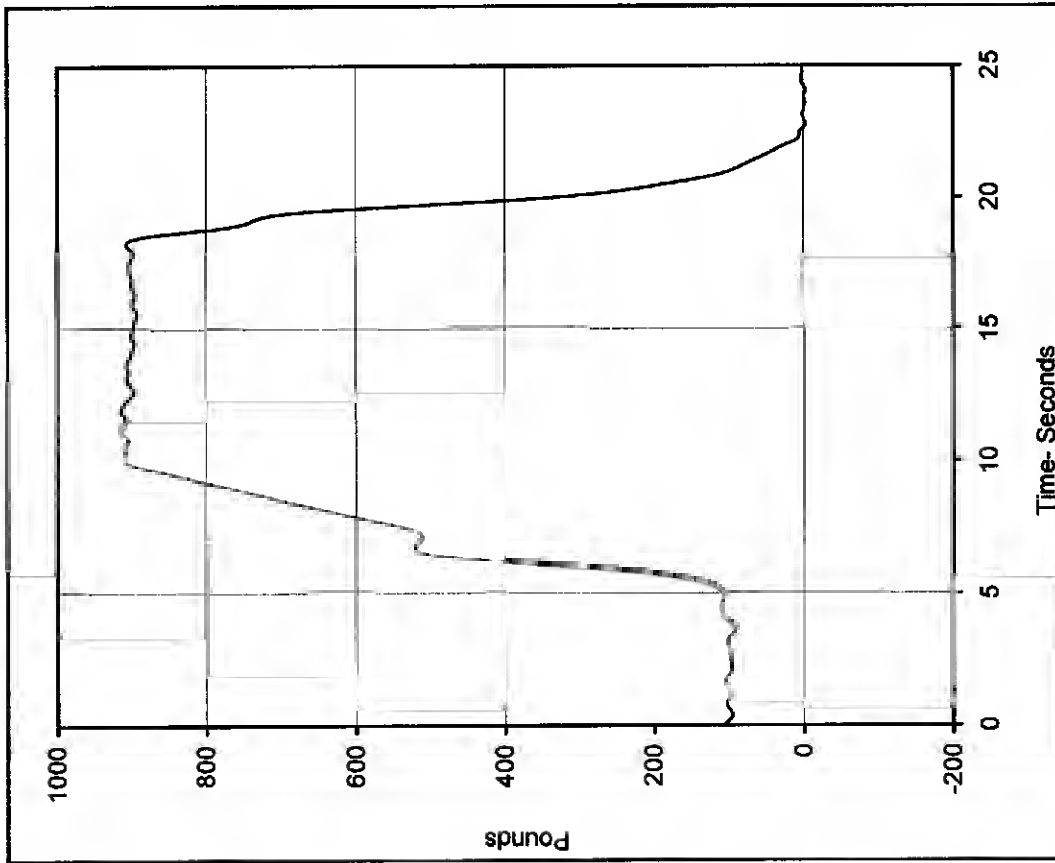
Curve Description		CURNO	Type	
Pass. Seat		002	FIL	

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	919.0	13.7	-1.8	24.3	1



Test Date: 8/24/04
Project No.: C40501

Test Program: FMVSS 207 Fwd. Seat Frame and Adj. (Strut)
Test Vehicle: 2004 Mini Cooper 2-Door Coupe



Curve Description		CURNO	Type
Driver Seat		001	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	915.2	11.2	-3.0	24.1	1

Test Program:

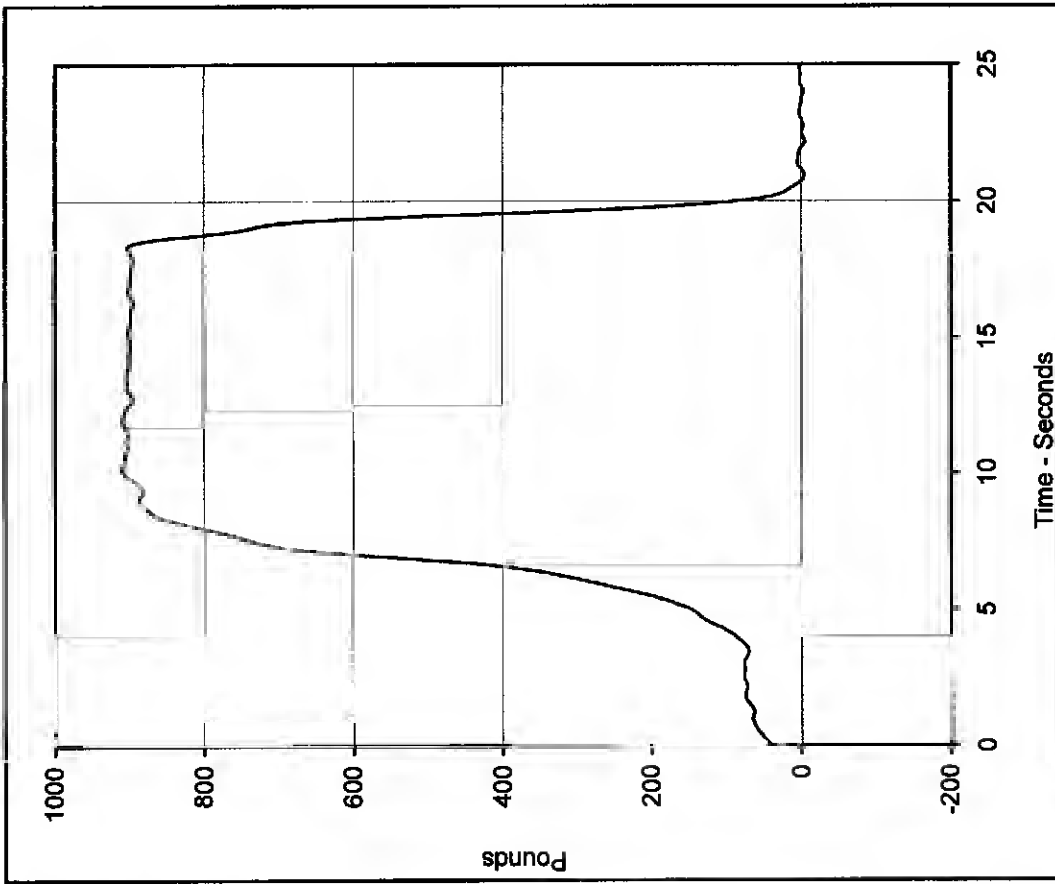
FMVSS 207 Aft Seat Frame and Adj. (Strut)

Test Vehicle:

2004 Mini Cooper 2-Door Coupe

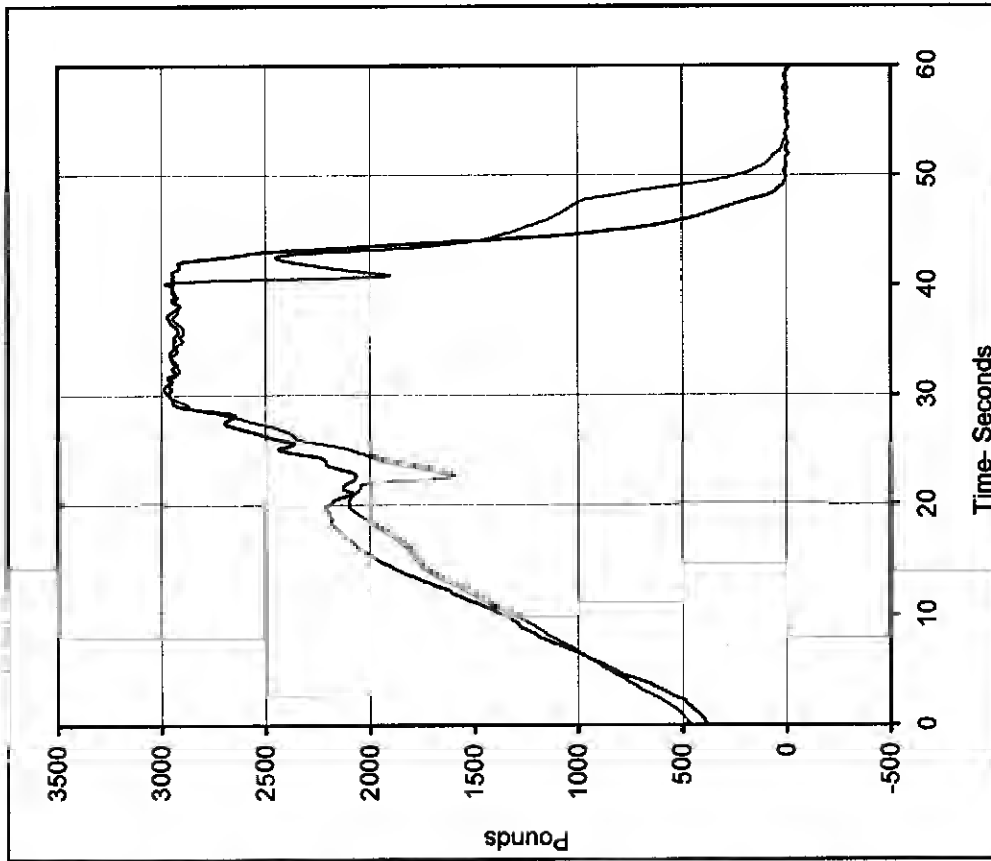
Test Date: 8/25/04

Project No.: C40501



Curve Description		CURNO	Type
Pass. Seat		002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	909.8	10.2	-5.1	22.2	1



Curve Description	CURNO	Type
Driver Lap	001	FIL
Driver Shoulder	002	FIL

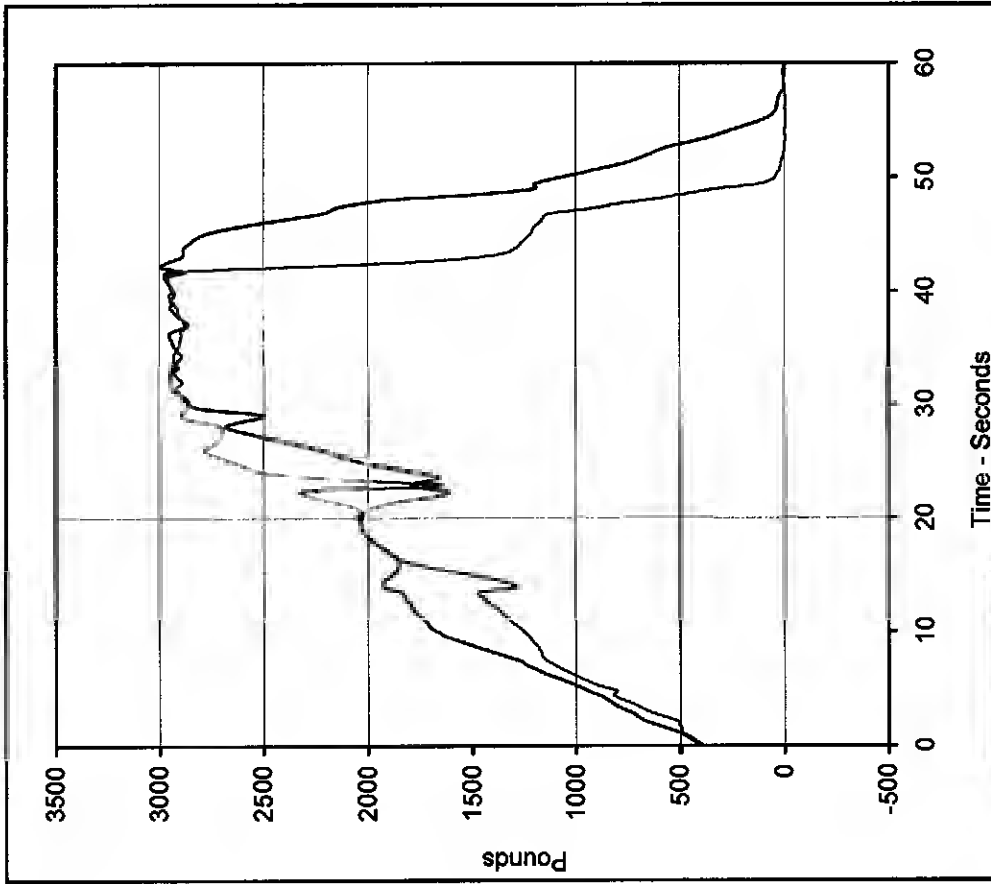
Units	Max	Time	Min	Time	Filter (Hz)
Pounds	2971.9	37.2	-15.2	60.0	1
Pounds	2986.5	30.6	-3.4	54.6	1

Test Program:

FMVSS 207/210 Front Seats

Test Vehicle:

2004 Mini Cooper 2-Door Coupe



Curve Description	CURNO	Type
Passenger Lap	004	FIL
Passenger Shoulder	005	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	2992.0	42.2	2.6	59.9	1
Pounds	2978.1	41.6	-6.0	54.6	1

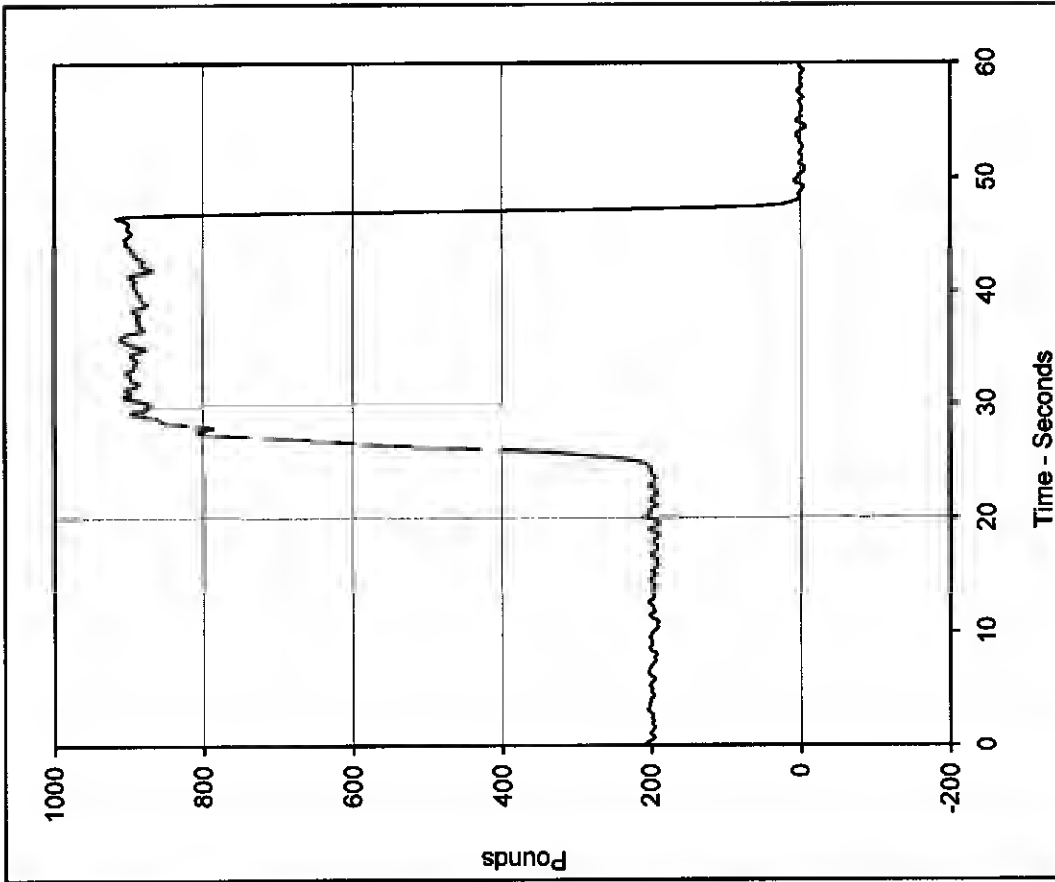
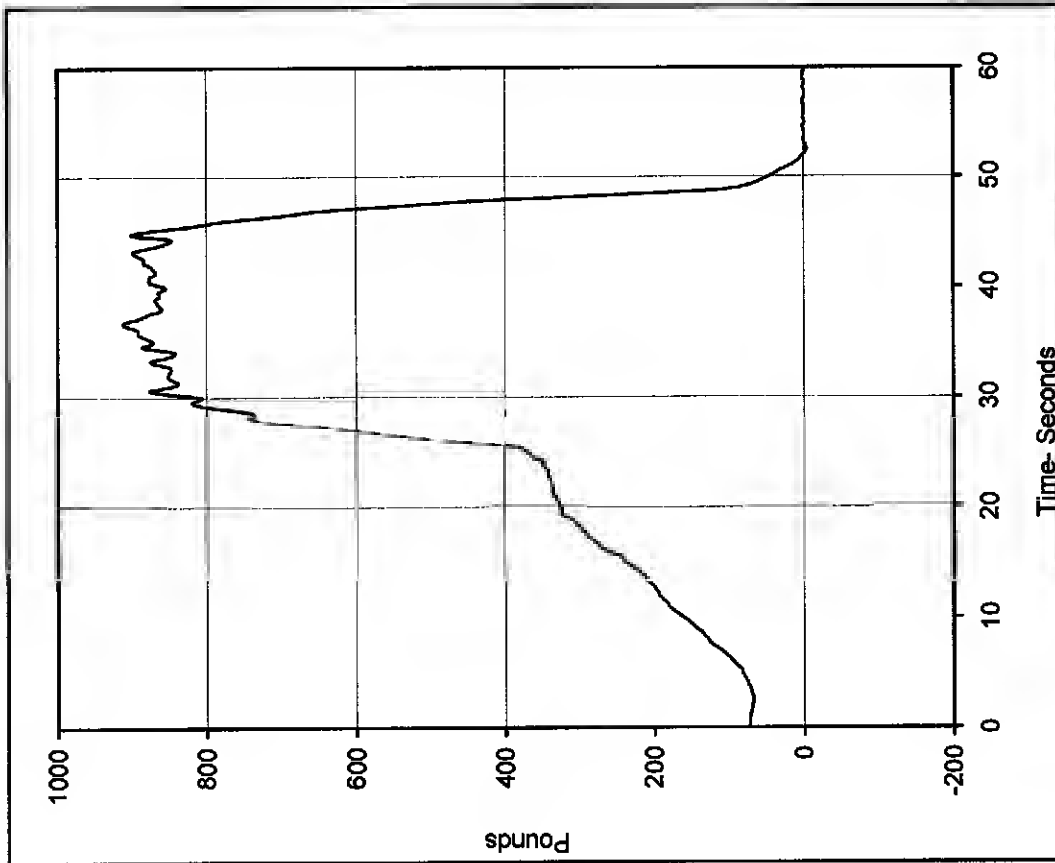
Test Date:

8/27/04

Project No.:

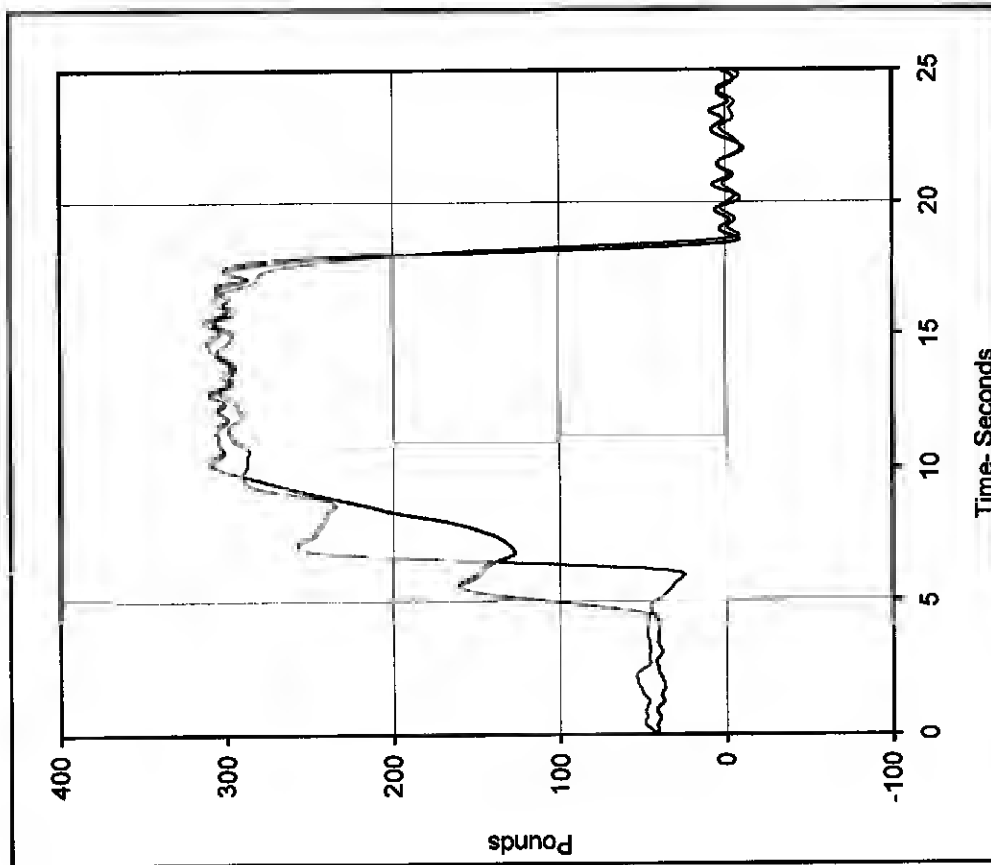
C40501





Test Date: 8/27/04
Project No.: C40501

Test Program: FMVSS 207/210 Front Seats
Test Vehicle: 2004 Mini Cooper 2-Door Coupe

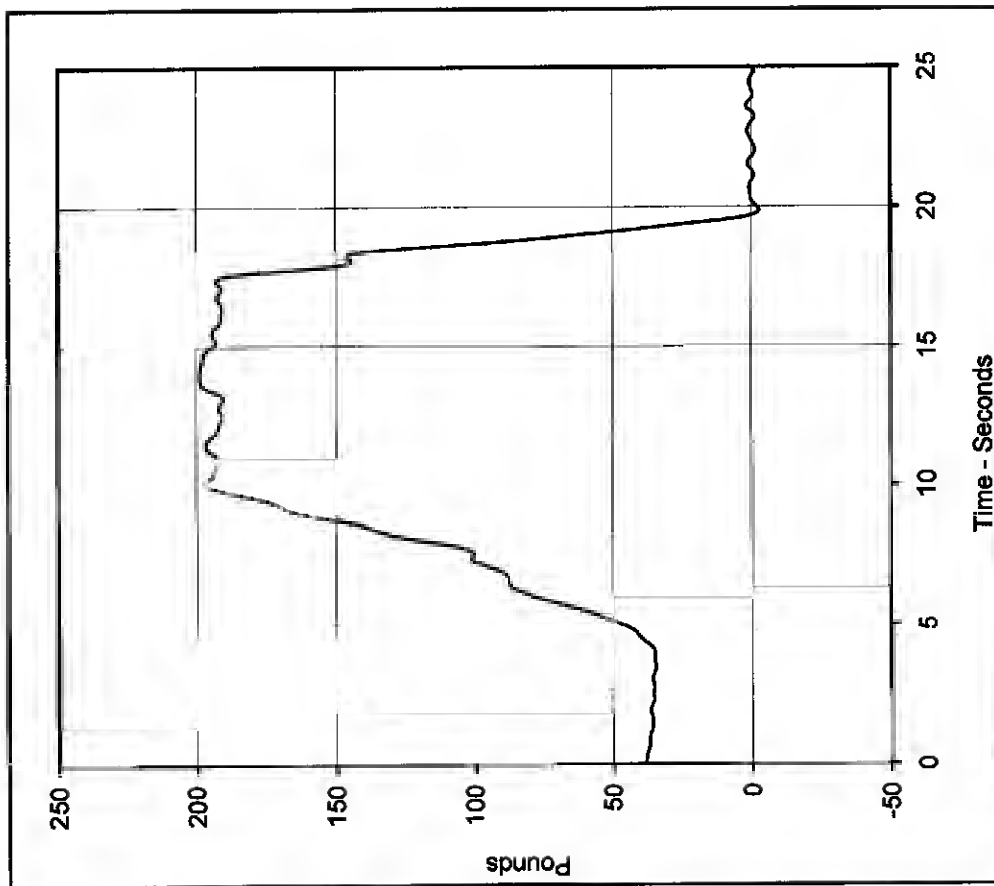


Curve Description	CURNO	Type
Left Rear Seat Back	001	FIL
Right Rear Seat Back	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	310.2	12.8	-10.8	22.0	1
Pounds	312.4	15.5	-8.9	22.0	1

Test Program: FMVSS 207 Fwd. Seat Back & Cushion (Rear)

Test Vehicle: 2004 Mini Cooper 2-Door Coupe



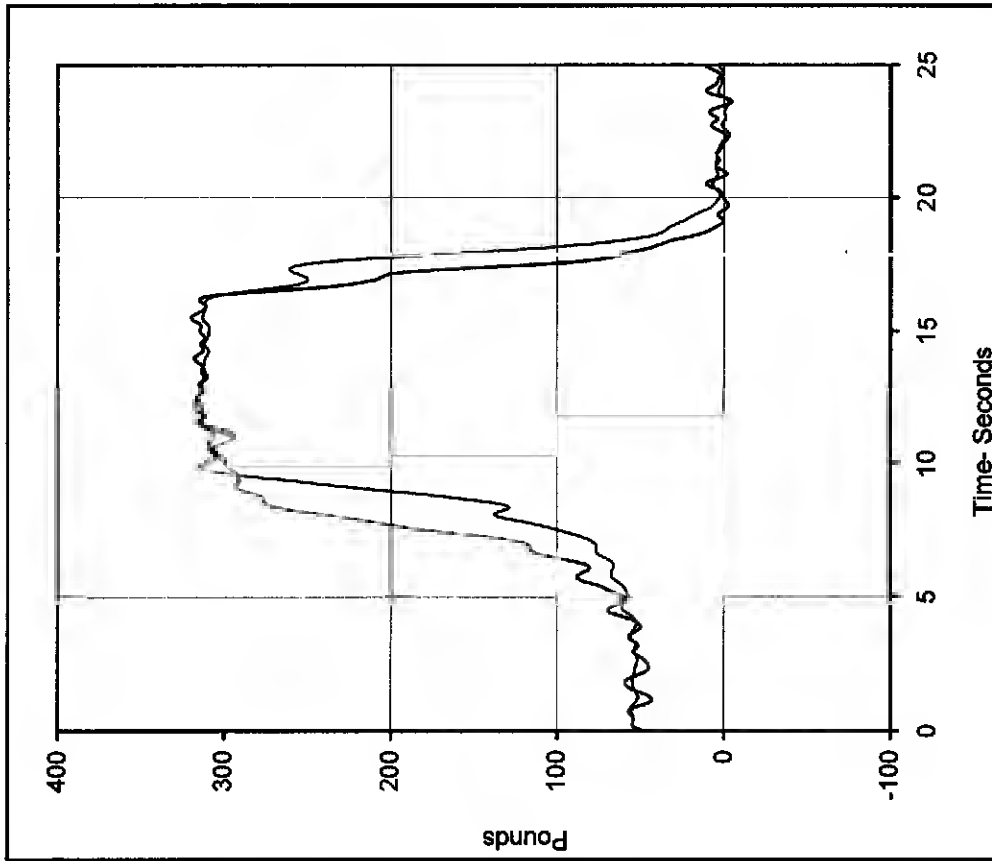
Curve Description	CURNO	Type
Rear Seat Cushion	004	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	198.8	13.9	-2.7	19.9	1

Test Date: 8/30/04

Project No.: C40501

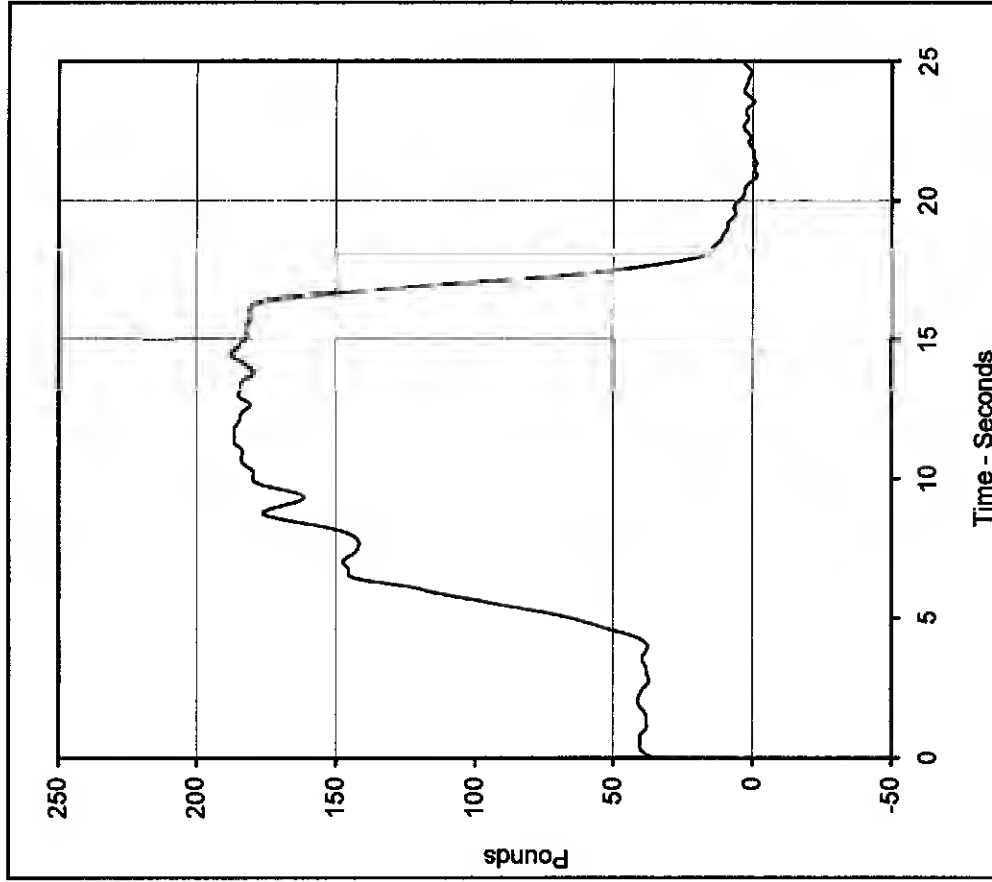




Curve Description	CURNO	Type
Left Rear Seat Back	001	FIL
Right Rear Seat Back	002	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	319.4	15.5	-4.8	23.6	1
Pounds	315.5	12.5	-3.2	22.4	1

Test Program: FMVSS 207 Aft Seat Back & Cushion (Rear)
 Test Vehicle: 2004 Mini Cooper 2-Door Coupe



Curve Description	CURNO	Type
Rear Seat Cushion	004	FIL

Units	Max	Time	Min	Time	Filter (Hz)
Pounds	187.7	14.5	-1.3	20.9	1

Test Date: 8/30/04
 Project No.: C40501



APPENDIX C

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

FMVSS 207

Test Equipment List

8/23/04

2004 Mini Cooper 2-Door Coupe

Description	Manufacturer	Model No.	Serial No.	Limit	Accuracy	Cal. Date	Due Cal.
Hydraulic Pump	Lincoln	T-3825-C	2460952	8 gpm @ 2700 psi			
Computer	Panasonic	CF-71	8IMAA01852	N/A	N/A	N/A	N/A
TDAS	DTS	TDAS	DM0103	N/A	SAE J211	11/15/03	11/14/04
Load Cell	Lebow	3108	1001	300 LB	± 1.0%	5/20/04	11/18/04
Load Cell	Lebow	3132	622	500LB	± 1.0%	5/20/04	11/18/04
Load Cell	BLH	U3G1	49296	3K	± 1.0%	5/22/04	11/20/04
Load Cell	BLH	U-1C	N873	6K	± 1.0%	5/20/04	11/18/04
Load Cell	BLH	U-1C	11139	12K	± 1.0%	5/20/04	11/18/04
Load Cell	Alinco	342-E	22438-B	10K	± 1.0%	5/22/04	11/20/04
Load Cell	Alinco	342-E	22440-A	10K	± 1.0%	5/22/04	11/20/04
Load Cell	BLH	U3G1	81711A	10K	± 1.0%	5/22/04	11/20/04

